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THE PATHOGENESIS OF GALLBLADDER DISEASE*

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THERE probably has been no part of the body which has received such neglect, as far as our ascertaining fundamental knowledge of its anatomy, physiology, chemistry and pathologic physiology is concerned, as the liver and bile tracts. In the last fifteen or eighteen years we have progressed a little bit, but our knowledge is still most woefully deficient.

There are today very fundamental things about the gallbladder and its physiology of which we are totally ignorant. For example, there are substances in the bile which occur in amount up to one-quarter of a per cent, of which we know nothing, and that is a very large percentage of unknown substances to find in any of the physiological fluids. We know pitifully little of the major constituents of the bile. Bile acids or bile salts, as they occur in the gallbladder, occur in concentration stronger than any substances occur in any body fluids. We don't know where they come from. It is only within the last few years that we have even known what they were chemically.

I think with this as an apology, we may present a brief review of some of the newer aspects of the pathological physiology of the gallbladder and bile tracts, and follow it up with what we may set tentatively as some of the facts which will be of aid in the clinical handling of gallbladder cases.

The first thing I want to speak of is a very simple and a very obvious one, and that is the size of the gallbladder. We see in our textbooks that the gallbladder holds an ounce to an ounce and a half. Most anatomists allow 30 to 40

c.c. content. We have seen, within a period of five years, statements by the greatest authorities on the subject that the gallbladder is too small to have any function. I believe most of us would now very definitely change our minds about the function of the gallbladder, and a great many of us would be prepared to admit that it has a function exceedingly important in digestion, and perhaps a function that we don't get along well without, when the gallbladder is removed.

It is very difficult to say how big a gallbladder is. The old statements from our anatomy books were taken from deadhouse material and operative specimens which, of course, have no live muscle in them and couldn't be stretched. However, if you go to the dog laboratory you will soon find that dogs' gallbladders, a great many of which are removed just to get dog bile, are actually larger in content than the anatomists allow for the human gallbladder.

We have tried to make some studies of the human gallbladder by x-ray, and, of course, the figures we arrived at are only tentative and only represent a minimum. If the gallbladder is placed at right angles to the x-ray plate, provided the gallbladder is full and hence rounded, one can calculate as to its size, but if the gallbladder is at a certain angle with the x-ray plate, it will appear to be a good deal smaller than it actually is.

A series of human x-ray studies show us that the human gallbladder, rather than 40 c.c. in size when full and round, runs up to 80 and averages nearly 60. When we consider that one of the functions of the human gallbladder as well as that of animals is not only to store the bile

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but concentrate it, and it concentrates it four to six times (some authorities state up to ten times, although I have never seen it as high as that), it is obvious that its functional capacity is 300 c.c., which is enough to take care of three square meals a day.

Some other facts about the physiology of the gallbladder that don't make us any happier as surgeons are that, through perfectly clear demonstrations, bile tracts as a whole do not dilate to any significant degree after cholecystectomy. At first we thought they did and hoped they did, but anyone who has done experimental work realizes that they do not. The reason we first thought they did was that the common ducts which had to be reoperated and were found enlarged were those that were obstructed, and I don't believe any observers today would admit that there is any very great enlargement of the gall duct as a storage space in the absence of the gallbladder.

The liver, unfortunately, is an obstinate organ that insists on secreting its bile independently of meals. That independence is almost absolute. There are variations in the rate of the secretion of the liver but it is not affected by meals. So we have to face the issue that when the gallbladder is removed we are removing an organ that is able to take care of most of the day's bile and pour it into the gut promptly when needed. Its use is the adaptation to the human preference for intermittent feeding. With the herbivorous animals feeding is constant—they have to eat all the time to get enough food—and they don't need gallbladders.

So much for the anatomy. Now for the chemistry of gallbladder disease.

Gallbladder disease is so tied up with the problem of gallstones that for the present I will not try to isolate the two. It is becoming more and more evident from the follow-up statistics of every clinic, including our own, that the removal of the non-gallstone-containing gallbladder is disastrous. The patients are very often no better, and we, therefore, are led to assume that their difficulty has been with the stones and not with the infection of the walls of the gallbladder. The older figures showed far more non-calculus cholecystitis than the recent figures do, indicating a recognition of this fact.

Gallstones are composed of three important

substances. The overwhelmingly important substance is cholesterol; next is calcium, and the next is pigment.

Cholesterol gallstones present a problem con-

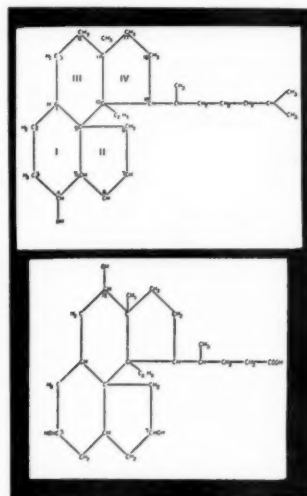


Fig. 1. Similarity of structural formulae of cholesterol (above), and a bile acid (below).

finely solely to man. There has never been any gallstone found, or made experimentally, to my knowledge, outside of man that contained any cholesterol. So we are dealing with a purely human problem in which experiments in animals have to be interpreted with very great caution.

Cholesterol has been associated so much with the bile that it has led us astray only too frequently. Far too often have we thought of cholesterol, until the modern blood studies of nephrosis, diabetes, and so forth, as a substance associated with the bile. As a matter of fact it is present in bile in rather low concentrations, only a small fraction of the blood concentration.

The cholesterol is almost certainly derived from or converted into some mechanism from bile acids. The accompanying formulas (Fig. 1) show the very great similarity between cholesterol and bile acids. It would be very difficult to tell these two apart without very careful study.

Cholesterol is not a bile substance nor a liver substance. Cholesterol is found in the blood, many times (even up to fifty times) its con-

centration in the bile. It is found in the bowel in very much higher concentrations than in the bile. The bile is not the main medium for the excretion of cholesterol, not the main route by which it is passed out of the body. The gut is the main route. That is the all-important thing we have to face in this gallstone problem, that it is not a diathesis.

Twenty to twenty-five years ago, there was a great furore when fairly accurate methods of making blood cholesterol estimations were discovered. It was found that some people had much higher amounts of cholesterol in the blood than others, and it was thought that these would be the people who would have gallstones. But today large series of observations have shown conclusively that the gallstone patient, in the absence of common duct obstruction, has no higher blood cholesterol than anybody else. It was a disappointment, and we had to start all over again.

We stubbed our toes before in another theory, which has recently been completely abandoned,—that there was secretion of cholesterol by the mucosa of the gallbladder.

In a series of experiments we found that the average cholesterol content of bile in the gallbladders of thirty-six dogs with stasis of twenty-four hours or less averaged 57 mg. per 100 c.c. of bile, whereas in forty-two dogs with common duct ligation of from three to fifty-eight days' duration the cholesterol was only 51 mg. per 100 c.c. These are by no means the only such recorded experiments and they all go to show that there is no more cholesterol in the stasic gallbladder than in the open one. Cholesterol is not excreted by the gallbladder mucosa and does not accumulate in the gallbladder under condition of stasis nor under conditions of inflammation, as will be shown later in this paper.

It has been shown by a large number of observers that cholesterol is carried over into the bile by the bile acids as a substance which has not been converted into the bile acids, as in most animals. Most animals have a much lower bile cholesterol than man has. The cholesterol is held in a chemical solution of bile salts, and this can be shown in a number of different ways. If you take human or dog bile you can dialyze the bile salts out, and after they are out so enough is not left to keep it discolored, there will be a precipi-

tation of cholesterol inside the membrane. The same experiment may be done just as easily with the gallbladder. The gallbladder makes a nice dialyzing membrane, and this whole phenomenon may be demonstrated with an actual gallbladder.

In the various types of gallbladder, the normal, the one with stones, acutely infected, or chronically infected, the cholesterol content stays about the same. There is very little change. I may say that the figures we present, and most people present, on cholesterols have a 20 per cent margin of error. There is no particular change in the amount of cholesterol in most types of gallbladder. In the infected, however, the bile salts are absorbed. We see a perfectly obvious explanation of why the cholesterol becomes precipitated in the closed or infected gallbladders when the bile salts are absorbed from them.

There is actually in our series, from operative specimens in the human being, hardly any more bile acid than there is cholesterol.

The other rather important substance in the human bile which gathers in the form of gallstones is calcium. Ordinary duct bile contains a calcium content rather similar to that of the blood, sometimes exactly the same, although at other times a little higher. I have never been able to demonstrate, as others have, the exact parallel between the two. It is concentrated in the gallbladder and it is concentrated about as many times as the other solids are. If the gallbladder becomes acutely infected, there will be a rapid absorption of this from the gallbladder material. If obstruction has been present for a while, infection goes away, things become more or less static and we have an excretion into the gallbladder interior of the bile from its wall. This produces calcium rings on stones made of cholesterol or pigment. It produces a deposition of the calcium and the spontaneous fractures which occur in cholesterol stones. It produces calcium cream which one finds sometimes in a gallbladder that has been closed for a long period, a milky substance which proves to be pure calcium carbonate milk.

Just to sum up here, I will review the action of the normal human gallbladder (Fig. 2). Here is what apparently happens. The normal human gallbladder simply absorbs water from the bile. It concentrates up to four to six times. As I say,

I have seldom found it concentrated more than six times, although some of the earlier observers report higher degrees of concentration. If you measure the pigment, calcium, bile salts and cho-

Taking that as the workings of the gallbladder then, there is just one thing left in gallstone formation, and that is the pigment. I believe the pigment may be a diathesis. The concentration

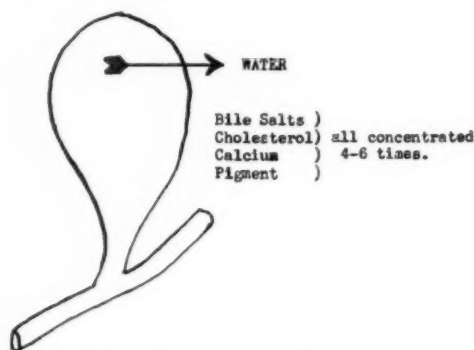


Fig. 2. Action of normal gallbladder.

lesterol, you will find they are all concentrated at about the same rate. Therefore, we assumed that during the normal period of concentration, which lasts a few hours during the day, not more than a day generally, there is no change in the bile except removal of water from it.

On the other hand, what happens when you get an acute infection? When you get an acute infection, the cystic duct is swollen shut, or perhaps it will be closed by a stone. We do have absorption of water, a rapid absorption of bile salts, and quite a rapid absorption of calcium (Fig. 3). The cholesterol and pigment stay untouched. That is the period of the first two or three days of acute inflammatory reaction or an edema.

Very soon the acute irritation subsides, but if the cystic duct stays blocked by a stone or any other mechanism we then have a huge secretion of calcium from the gallbladder mucosa (Fig. 4). I have produced experimentally such a secretion of calcium. The bile salts will be absorbed in the first few days. The cholesterol is absorbed very much more slowly. If the gallbladder stays closed, all the sterols may be absorbed within a few weeks' time, although it generally takes considerably longer than that. The pigment will be absorbed, but that generally takes a good many months. The pigment is probably absorbed in solution. I feel rather sure that the cholesterol is absorbed by the leukocytes or by wandering cells of some sort.

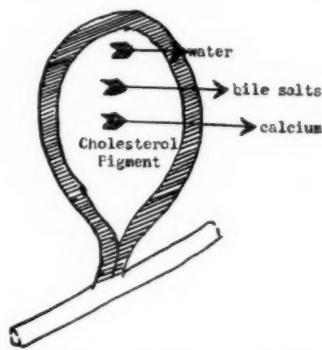


Fig. 3. Acutely obstructed gallbladder. The cystic duct is swollen shut or closed by stone.

of pigment in the gallbladder runs parallel with the pigment in the blood. There is the well-known hemolytic jaundice with the excessive pigment in the human being, where practically all get pigment stones if they live long enough.

There is the parallel of cattle, the ox that eats green food containing chlorophyll, which is an ancestor of bile pigment just the same as human blood pigment is. Oxen get gallstones. It also appears that pure pigment stones tend to be found in young people who are very dark and very hairy. So probably that is related as a metabolic phenomenon, and that actually there is a saturation of the bile in certain cases with pigment which brings about its precipitation. This is mixed with calcium carbonate. We speak of calcium pigment stones, and we used to speak of calcium bilihumin. The calcium bilirubinate in pigment stones is very little. It is really a mixture of calcium carbonate and pigment. So of the three, the cholesterol, the calcium and pigment, we only have the pigment which may be precipitated so we can see it in an open gallbladder.

The formation of cholesterol stones is in brief periods, with infection. Mixed calcium stones would require long periods of closure, with quiescence of infection or at least minimal infection.

That brings us to the old problem of the relation of cholecystitis to the gallstone. The commonest types of gallstone must, as far as we can

see physiologically and chemically, be produced in a closed gallbladder. What closes it? After there is once gallstone formation, it is obvious that a gallstone may close it, but what initiates

pendix that is infected, nor a bladder that is infected.

Figure 5 is an example of a gallbladder. The mucosa is very little damaged. If we make our

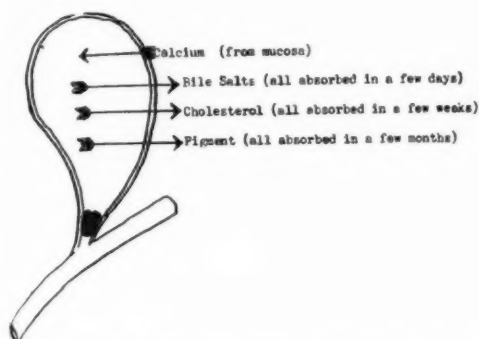


Fig. 4. Chronic cystic duct closure. Inflammatory swelling is subsiding or absent.

the first attack has always been a profound mystery and perhaps is even today.

With a view to trying to get an insight into this problem, we have been making some pathological studies. We have taken a series of about 120 cases* in which we have removed many of the gallbladders without touching them with a clamp, except one on the fundus and one on the cystic duct. You cannot always do that, but sometimes you can. So we remove them intact. We have had chemical analysis and bacteriological studies on all those cases. We preserved the gallbladders carefully, injected them, and after they were set made serial sections about a centimeter apart.

The result of these studies has been in accord with the recent studies of Denton, Feinbatt and some of the comments of Boyd on the subject. There were things that surprised me, and I will give them to you as we found them.

The characteristic feature of acute or chronic cholecystitis is not a picture that is in any way consonant with that of an infection. The characteristic feature is, in the first place, edema, profound edema; enormous dilatation of the lymphatics; dilatation of the blood vessels; considerable hemorrhage in the acute cases; and a moderate degree of infiltration, not of pus cells but of large plasma-like cells and of lymphocytes. The polymorphonuclear leukocytes appear late in the subsiding stage when they are practically all eosinophils. The picture doesn't look like an ap-



Fig. 5. Note extensive damage to gallbladder wall with preservation of mucosa and that the main pathologic changes consist of edema in the outer coats. This example of acute cholecystitis yielded no bacteria on cultures.

sections carefully, inject the gallbladders without opening them and do it promptly, within an hour of the time of removal from the body, we find in most cases the mucosa intact and relatively normal. That is something Boyd has commented on also. He said it is astonishing how normal it may be.

The muscularis is but little thickened. The thickening in this case is in the serosa, as in most other cases.

TABLE I. MEASUREMENTS OF NORMAL AND "INFLAMED" GALLBLADDERS

	Thickness in millimeters		
	Mucosa	Muscularis	Serosa
Normal	3	1-2	2-5
Normal	3	1-2	2-5
Normal	3	1-2	2-5
Thickened	3-5	2-3	15-20
Thickened	3-5	2-3	15-20
Thickened	3-5	2-3	15-20

(From Andrews, Arch. Surg., Nov., 1935)

Some measurements of the gallbladder appear in Table I. The mucosa becomes but little affected, the muscularis little affected, but the serosa becomes several times its size.

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TABLE II. CULTURES FROM GALLBLADDERS

	No.	Positive	Strept.	B. coli	Staph.	B. Welchii	Other bacteria
		Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
1932, Authors, Present series.							
Fluid contents.....	106	33	6.5	17.9	4.7		5.6
Wall.....	200	89	29.5	26	26	1	18
1928, Wilkie ^a							
Fluid contents.....	50	12	4	6		2	
Wall.....	50	12	4	6		2	
1930, Gordon-Taylor and Whitby ^a							
Fluid contents.....	50	32	8	12		6	6
Wall.....	50	82	22	18		16	26
1929, Branch ^a							
Fluid contents.....	210	40	15	50	18	5	9
Wall.....	210	53	11	49	17	8	10
1928, Friesleben ^a							
Fluid contents.....	132	47	11	28			8
Wall.....	96	76	13.5	28	32		2
1927, Illingworth ^a							
Fluid contents.....	100	40	17	21	3		
Wall.....	100	62	39	22			6
1927, Judd, Mentzer and Parkhill ¹¹							
Fluid contents.....	193	14.5	8	6	1	0.5	4
Wall.....	200	49	18	4.5	10	1	20
1916, Rosenow ^a							
Fluid contents.....	29	55	17	31			24
Wall.....	32	84	56	28		22	22
1925, Johnson ^a							
Fluid contents.....	100	32	3	18	7		4
1924, Blalock ^a							
Fluid contents.....	270	58	5	31			10.7
1922, Drennan ¹⁰							
Fluid contents.....	100	19	2	12	4		1
Average of results:							
Fluid contents.....	1,340	34.7	8.7	21			
Wall.....	938	63.4	24	22.6			

(From *Magner and Hutcheson, Jour. Can. Med. Assn., vol. 27, 1932*)

Other factors of interest were those also found by the above observers, in that we couldn't find any empyema of the gallbladder. Case after case would come up, and when we would make smears of what we thought was pus, we would find it was calcium carbonate or crystals of cholesterol. In not a single case have I ever seen empyema of the gallbladder that would stand up under microscopic examination. I am sure it does occur, but all of them in our clinic have failed to stand up under microscopic examination. Search for bacteria in the walls of these gallbladders in our hands has been futile, and we found almost none in smears.

I would almost agree with the statement of Denton that the acute cholecystitis appears to him more comparable to a hemorrhagic infarct than it does to an acute infection.

We will go along to bacteriological studies.

Table II lists a large series of investigators who have made bacteriologic studies, and you will notice that in only about a half or two-thirds

TABLE III. PERCENTAGE OF CASES SHOWING INFECTION CLASSIFIED ACCORDING TO TYPE

	No. Cases	Wall	Fluid Contents	50,000+
Normal	8	37%	12%	0
Normal with stones	12	50%	33%	8%
Common duct	4	100%	100%	100%
Quiescent	36	33%	25%	8%
Active	31	42%	42%	6%

of the cases of acutely infected gallbladders has anybody been able to culture any bacteria.

Our own results were quite comparable. In the actual majority of cases we cannot culture bacteria. We have found about the same type of bacteria as others have. We, however, also made quantitative cultures (Table III). That is, we made plates and bacterial counts, as one would in milk. We were very much amazed to find that even the acute active gallbladders were in most cases (one-half) sterile, and in other cases they usually contained 25 or 30 bacteria per cubic

centimeter, or as high as 100. In only a small minority did they contain very large amounts.

So much for bacterial findings. We, nor anybody else, have not been able to culture sufficient amounts of bacteria from the overwhelming majority of our cholecystitis cases. One hesitates to accuse a whole generation of bacteriologists of incompetence, but in view of the chemical and pathological findings of ourselves and our colleagues and other observers, we have come to consider tentatively the matter of chemical cholecystitis. As you know, that has been produced in a number of different ways. It was produced by Mann through the injection of Dakin's solution intravenously. Wolfer injected pancreatic juice; gastric and intestinal juices were used in our own laboratory. There have been interesting reports from the Mayo Clinic on allergic cholecystitis. I couldn't at first see how it was a possible physiologic mechanism, but have been compelled to change my mind. However, there were other factors in it that we considered, and one was that we hadn't examined the bile itself carefully enough. It is quite generally accepted that gastric ulcer occurs because the stomach juices just get "too hot" for the bag that contains them. The acidity is too high, and it eats holes in it. There was a possibility that the same thing might occur in the gallbladder.

The difficulty of testing this was great, because if one sticks a needle into a gallbladder to inject anything, he will produce a marked cholecystitis at the point of the needle puncture. You can stick a needle into the skin or bladder or stomach without producing inflammation, but if you put it into the gallbladder you will have a spot as big as a dollar and the gallbladder will be five or six or ten times the normal thickness. If you put the needle in from the liver side, the same thing happens.

We have devised a simple trick for doing it. After extended experiments, we learned we could cut a hole in a dog's common duct, pass a ureteral catheter into the gallbladder, inject the substance, withdraw the catheter and put into the duct, a cannula to re-establish the flow of bile. By this technic, we found, we were able to get normal controls. We could inject material into that gallbladder and have normal controls. We tried rich emulsions, five and six to ten c.c. of streptococcus, staphylococcus, and other bacteria, and they, with the exception of one single strain

of streptococcus, hadn't the slightest effect on the gallbladder. They produced no cholecystitis whatsoever.

The next thing we tried was the use of bile itself in various concentrations, and much to our astonishment we found that by using bile, to which bile salts have been added in concentrations only one or two per cent more than the six or eight that are found in normal human bile, we produce an overwhelming cholecystitis, a thickened, white gallbladder, with fibrin all over it. A good many ruptured and leaked and gave rise to death from bile peritonitis.

I think it is at least significant that there is a possibility that the same mechanism, which we know may be working in the stomach, in that we have shown, in a series of 20 or 30 experiments now, bile salts at a concentration which is only a trifle more than that which the normal human gallbladder contains, will produce a most overwhelming cholecystitis. In view of the well known toxicity of bile salts, I think we may well suspect that some cases of human cholecystitis may be initiated by some such mechanism as this.

What lessons may we draw from this and other studies for the clinic?

In the first place, I would like to say a few words about silent gallstones. I think the operation on silent gallstones is a scandal.

TABLE IV. MORTALITY PER 100,000
(Decade 45-55)

Gallbladder	1,024
(about 30% have gallstones)	
Appendicitis	2,562
Breast	2,542
Uterus and Adnexa.....	4,455

If one takes the age decade of forty-five to fifty-five (about 30 per cent in this decade have gallstones), we find that the mortality from diseases of the gall tract is 1,024 per 100,000 (Table IV). This is a lower mortality than that from appendicitis or diseases of the breast, but nowhere near as high as from diseases of the uterus and adnexa. Modern x-ray technic enables the clinician to make the diagnosis of the presence of gallstones without difficulty, but in the case of silent gallstones I think it is a sin that any operations at all are performed in such cases.

There are other very important lessons to be drawn. Our follow-up statistics have shown us

that there are two definite types of syndromes which have been attributed to the gallbladder.

The first is that of biliary colic, and our follow-ups have shown that our results in the curing of biliary colic have been first class. They are far better than from intestinal surgery, and the percentage of complete cures is surprisingly high.

On the other hand, there is a larger group of cases that used to be considered gallstones. They are cases that really have gallstones all right. That is simple enough to prove with an x-ray. On the other hand, they are cases which do not present the syndrome of an acute biliary colic but one that vaguely resembles a gastric syndrome, with belching and gas, irregularity of bowel movements, colic of a mild sort definitely in the colon, not in the gallbladder, and cramps. All we can say is that it is a vague indigestion that doesn't quite fit the ulcer syndrome.

I don't know how many gallbladders have been removed for this syndrome, but I know in Graham's and Palmer's series, and our own, the results from surgery have been disastrous. Only a small minority of our patients have been cured of this syndrome by removal of the gallbladder. Most of them stayed as they were. About a third of them were improved, but most of them stayed as they were; they persisted in having this same syndrome just as they did before operation. Also, on study we found that a good many of our patients who had had gallbladder colic previously, had had no indigestion, and when we removed their gallbladders they developed such a syndrome.

This may be due to one of two things. I think it is definitely associated with the fact that these patients' gallbladders are out of commission. As I tried to demonstrate, the gallbladder has a definite function. If the cystic duct is closed or the gallbladder is so packed with stones it can't empty, it can't perform this function. I feel firmly that the vague indigestion syndrome is not due to irritation from the gallbladder, but the absence of the normal function of the gallbladder. Hoping to restore normal function by removing the gallbladder is absolutely idle. It may be that either these patients without gallbladders or with functionless gallbladders are pouring bile into an empty gut, or, that they are not pouring bile into a full gut and helping it to digest. Which of these mechanisms is the true

one, I would hesitate to guess, but I feel confident it is one of these two.

Furthermore, we studied a series of cases of cholecystitis that had had acute colics, and they had had no indigestion between times. Of this series, we picked out about twenty that promptly developed this mild indigestion, and we found those twenty had had active gallbladders. In other words, we may very well initiate this form of indigestion by the removal of a gallbladder which has only given symptoms of colic before.

There are some other lessons we may draw from this, and the next thing we will come to is the question of operation for acute cholecystitis. There has been considerable literature lately emphasizing the safety of the operation for acute cholecystitis. I have done a number of such operations myself in the last few years, and I doubt very much if I will do very many more of them. I feel what they say about the safety of operating at this stage is true. You are not always going to get overwhelming infections, because it has been shown that bacteria do not play an important part in the majority of cases.

It may be easy, however, for the patient to get his gallbladder out in a hurry, but it is pretty tough on the surgeon, and if we operate frequently in the presence of acute cholecystitis we are going to make a lot of technical errors, because the operation is much more difficult technically. Furthermore, all cases of cholecystitis have a low bacterial count. There are some that are very definitely infected, and I suppose one might operate on fifty or 100 cases of acute cholecystitis, most of which are not infected at all. They consist of either a chemical or mechanical irritation, but when we operate on the fiftieth or hundredth really infected one, we are going to get the flare-up which made surgeons twenty-five years ago stop operating on acute gallbladders.

It used to be that an empyema would frighten a surgeon and he would think he had better drain it, because if he removed it, he might stir up an infection. I checked up on those we removed and found they had less than the average postoperative complications. Most of them aren't empyemas. We are frightened by the appearance of something that looks like pus, when it isn't pus at all.

The next thing we will speak of is the so-called Graham's minimal lesion of the gallbladder. These gallbladders often have a cholesterosis. I

do not believe that is a disease. It is normal in many animals. Whether it is normal in man or not, I don't know. However, our studies of gallbladders which did have cholesterosis made me believe it is more common in a normal gallbladder than in a diseased gallbladder. I do not believe it is a cause of gallbladder disease, but simply a condition that has no pathological significance. It is normal in several of the laboratory animals.

Let us now consider the matter of fever. If one accepts what we have said here, the nature of the pathological picture, the lack of ability to cultivate bacteria, we seem to take away the cause of fever in cholecystitis. Case after case has a high fever and neither we nor anybody else have been able to grow bacteria from more than half of such gallbladders, and then only in small numbers. I suspect we will have to reconsider our ideas of the cause of the fever.

Years and years ago we learned of Charcot's intermittent fever. We learned that the common duct obstruction was prone to cause fever. Every one we cultured showed 50,000 plus bacteria per cubic centimeter.

There were twenty-eight patients with cholecystitis in our series who had high fever, but the average acute gallbladder attack is not necessarily characterized by a high fever, as has been shown in the Mayo Clinic and a number of other places. It is very common to have a leukopenia with it.

I selected a number of patients who had fairly high fever. Of those, eleven were grossly jaundiced. Eight had a high van den Bergh index. One had a single white stool before operation. Three had stones, and four had obstruction at the juncture of the common and cystic ducts. Jaundice is usually caused by gallbladder disease and not by common duct disease. In the cases of jaundice one sees in the clinic, the overwhelming number are due to a stone or some inflammatory mass at the angle where the cystic duct joins the common duct. In some, the common duct is partially closed, just enough to cause a little tinge of jaundice but not enough to cause white stools.

Seeing that in this series we were able to account on the basis of common duct obstruction for twenty-seven out of twenty-eight, we have come at once to suspect the common duct in cases

of sepsis just as much today as we do on account of jaundice. Because the overwhelming percentage of cases of gallbladder disease have some tinge of jaundice, and such a few of them have common duct stones, I think these findings have a little bit to do in pointing to how often we should explore the common duct.

I think there has been much too much exploration of the common duct by actually opening it. I don't think there is any doubt that gallbladder mortality is going to be very markedly raised if we probe too many common ducts. Today, I limit common duct probing to cases in which there has been sepsis, and cases in which I have pretty definite proof that there is a common duct stone. In other cases, I have given up probing the duct, and I think the corresponding drop in mortality has been very gratifying. If we start probing ducts in every gallbladder case that has or has had a little jaundice, we are going to cause a lot of trouble.

To go on with the matter of jaundice, the preparation of the jaundice patient, I believe, is very important, and, to me, is one of the great mysteries of gallbladder trouble. The preparation of a jaundice patient consists of administering large amounts of glucose first. If you have lots of time and the patient isn't too sick, this should be a dietary measure. If he can't take all the food or perhaps can't eat at all, it should be done by the intravenous route. The well known protective effect of glucose on the damaged liver need not be discussed here.

The problem of calcium is a very interesting one. A few years ago there was a long series of articles showing how the administration of calcium in huge amounts pre-operatively would save many of our jaundice patients from hemorrhagic diathesis. On the other hand, the addition of calcium to the blood of the patient will not make the clot. But we have behind us today a good many years of clinical experience with the use of this, and in my hands and the hands of others it has been successful. So, in spite of the fact that we don't know why we give them calcium any longer, I think we should continue to do so, because, in my experience, it has more than justified itself. The bleeding that occurs in these jaundice cases is a bizarre performance. They often don't bleed at the operation more than the next patient will, but when the fatal times does come it is likely to occur from muco-

sal surfaces and not wound surfaces. The bleeding may occur into the lumen of the gallbladder that you put a drain into. It occurs very suddenly. I know of no special reason to explain this. In my hands, the coagulation test, bleeding test, and all, have been perfectly futile. They have not enabled us to predict the patients who are going to bleed. In other words, we have had patients with profuse hemorrhages from the mucous surfaces, from the bowel and mouth, who before operation had normal coagulation and bleeding times. I have lost all confidence in any test that predicts which case will or will not bleed, except that I feel very sure the more recent introduction of huge amounts of glucose as preoperative and postoperative measures has done more to prevent the bleeding than the calcium or anything else we have given the patients. I don't know why, and I have no answer to give to it.

We often encounter jaundice which is obviously incurable, due to carcinoma. We predict we are going to find this according to Courvoisier's law. In Sir William Osler's time, he noted that Courvoisier's law wasn't enforced, and instead of being 100 per cent it went to 40-60. I don't think it is of any value as a prognostication of what you will find in an abdomen. It hasn't helped me in the least. With 40 per cent one way and 60 per cent the other, there is just about as much chance of finding a large gallbladder as a small one.

I feel very sure that all cases, even of silent jaundice, should be explored. I know of no operation that gives a more dramatic palliation than a bile short-circuiting operation, either implanting the gallbladder into the stomach or duodenum. Besides the chances of palliation, there are a large number of cases of silent jaundice which we cannot diagnose which turn out to be simple common duct stones that are easily operable. We have made it a point to explore all cases of even silent jaundice, and I think it is quite thoroughly justified.

However, if you cannot make a short-circuiting operation due to the extent of the cancer or due to the shrinkage or partial obstruction of the gallbladder, there is something you must not do, and that is to drain the gallbladder. There is a persistent tendency on the part of the medical man to demand that you "drain the poison away." I don't know what right anybody has to

call a body fluid a poison. Bile is a vital necessity to life. The longest survival of an experimental dog with biliary fistula was five and one-half months. The longest survival I know of in an adult experimental animal with jaundice was sixteen months. In other words, biliary fistula is about three times as dangerous as jaundice is. The drainage externally of bile, following carcinoma of the pancreas, in order to "remove poison" so far fails, that the average length of life of the patient, in the series I have been able to get hold of, is under one month. They may be expected to fade out exceedingly rapidly where you drain the bile externally.

One more technical point with the common duct operation. The common duct is exposed in the peritoneal cavity in such a way that it cannot be closed, even a duct which is dilated to the size of one's thumb, or even larger. It may be my lack of technical skill, but in the majority of cases I have been totally unable to make a waterproof closure of one of these enormously dilated common ducts after removing the stones. In other words, sooner or later, and often distressingly sooner, the bile begins to leak around the tube into the peritoneal cavity. Such cases have profound sudden reactions, for two reasons, and there is one thing that is a life-saving measure. They have these reactions because this common duct bile is often infected and contains a lot of bacteria, very much more so than gallbladder bile in acute gallbladder disease. As I said before, the common duct bile may contain an enormous number of bacteria in the presence of obstruction, whereas normal common duct bile contains nothing. Therefore, you think that, as a life-saving measure in these common duct cases, you should wash out and aspirate as much of the common duct system as you can. If the bile is there and stagnant, we make an effort to aspirate that and get it outside the body.

In the second place, bile peritonitis, which is the real danger in a good many of these cases, is caused by the bile salts. After operation, especially after one with ether anesthesia, there is marked damage to the liver, and it no longer secretes bile salts in concentration sufficient to cause an irritation of the peritoneum. In the few days that it is necessary for the liver to sufficiently recover to secrete strong, concentrated bile again which is productive of peritonitis, the process will have become walled off.

Dr. Hawkins, in our laboratory, has just been making some very interesting experiments with this sort of peritonitis. He has shown that the peritonitis caused by bile salts or that caused by liver autolysis produces an exudate in the peritoneal cavity that runs rather similar to blood plasma of sufficient magnitude that if one calculates how much loss of blood that much exudate would represent, it would account for all the symptoms. The blood pressure falls rapidly with oncoming death. In other words, the hypertonic bile that comes into the peritoneum draws fluid and protein out of the blood. The exudate in such a peritoneum is often not toxic. One may put a pint of it back in the dog and it won't kill him. It may actually raise his blood pressure.

One must realize in these cases, and we have confirmed it with a few clinical studies, the great importance of keeping up the blood volume and the blood proteins. In other words, what these patients need, especially if we are going to submit them to a lot of strongly hypertonic bile over peritoneal surfaces (and we have to predict that we are going to have exudation), is a transfusion, and one should have a donor typed and be

prepared to give a blood transfusion to make up for the loss of that blood plasma.

I want to mention the relation of bacteria to some of these processes which occur in the peritoneum following leakage. Bile peritonitis, in most of the clinically reported cases, has not usually occurred after biliary tract operations. It has occurred in the presence of a normal gallbladder, and we don't know how, in the majority of cases, the bile reached the peritoneum. We have found that this bile peritonitis is accompanied by the growth of a large number of organisms, including Welch's bacillus in an exceedingly avirulent form. We do not believe this peritonitis is in any way especially related to Welch's bacillus, because we can inject that same organism from a human being or animal into the next one in overwhelming amounts, and there will be no peritonitis produced.

I think that as our studies go along we tend more and more to minimize the importance of bacteria and to emphasize chemical factors which fit in better with lack of bacterial findings. They fit in better with the pathological picture, and I think we shall be surely able to fit into that picture the clinical findings of the patient himself.

CHRONIC DUODENAL STASIS: A REPORT OF EIGHT CASES

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Etiology

CHRONIC compression of the third portion of the duodenum, according to Duval,¹³ was first described in 1900 by Petit of Paris in his thesis. He found this condition present in a cadaver, made excellent drawings of the appearance of the duodenum, and finally devised and executed a duodeno-jejunostomy on the cadaver. Duval found that in many cadavers there has been a flattening of the duodenum, as it crosses the spine, by the root of the mesentery and its vessels, and occasionally he even found a definite groove made in the duodenum, without dilatation above this point. He concluded, therefore, that stenosis of the duodenum here is only an accentuation of a normal condition. He shows plates to demonstrate that either the superior mesen-

teric artery or its first branch, the colica media, may be responsible for duodenal obstruction, the latter being the responsible factor when the ascending colon and cecum are redundant and the hepatic flexure of the colon occupies a low position in the abdomen. Other influences favoring this compression of the transverse portion of the duodenum are, according to Bloodgood⁵ and Duval,¹³ an abnormally short mesentery or relaxation of the abdominal wall, which favors a drag on the root of the mesentery. Laffer²³ called attention to loss of fat from around the mesentery as favoring a dragging on the mesenteric root. Codman⁷ thought man became subject to this affliction on assuming the erect position, for in animals on four legs the root of the mesentery hangs at a right angle from the du-

odenum and spine. Connor,⁸ in experiments on cadavers, found that a 500 gram pull exerted on the mesentery by a cord passed out through the anus, was sufficient to effectively constrict the lumen of the transverse portion of the duodenum. Dragstedt¹² has found that in dogs as little as six inches of water pressure applied to this portion of the duodenum is sufficient to cause the death of the animal by duodenal obstruction. Several authors, Laffer,²³ Pool,²⁶ and Duval,¹³ stress the importance of faulty innervation of the duodenum in favoring duodenal stasis. Duval had never seen a case of megaduodenum but believed that those which have been reported were related in their etiology to Hirschsprung's disease of the colon. Pool cites many cases where the onset of symptoms followed severe infections, fatigue and emotional upsets. He believes there are often spastic contractions at different levels of the duodenum, and sometimes atonic flaccidity of its wall. These may represent forms of vagotonia or sympatheticotonia respectively. Pool further believes that some people have a moderate degree of duodenal obstruction by the mesenteric root but have no symptoms until the duodenum periodically loses its tone (as with infections, emotional strain, fatigue, etc.). Normally the duodenum can compensate for slight obstruction. This periodicity of clinical symptoms has also been very characteristic in the series of cases here reported.

Various other anatomical causes for duodenal stasis have been described by many authors. Among these may be mentioned (1) congenital stricture of the duodeno-jejunal angle (Carling,⁹ Spriggs,²⁹ McDonald²⁴); (2) angioma of the duodeno-jejunal angle (Beer³); (3) embryological remnants of the gastro-hepatic omentum; developmental bands of adhesions from the transverse colon to the gallbladder, liver or pylorus; diverticula of the duodenum; cysts, hematoma, carcinoma or interstitial change at the head of the pancreas (Crouse⁹); (4) a mass of tuberculous mesenteric glands obstructing the terminal duodenum (Downes¹¹); (5) an intraperitoneal duodenum with the omentum and ascending mesocolon adherent to the duodenum causing constriction (Bargen and Walters¹); (6) a wide band of mesentery constricting the duodeno-jejunal angle (Judd and White²⁰); (7)

kinking at the duodeno-jejunal angle by overactivity of the muscle fibres in the ligament of Treitz (theoretical possibility).

Symptoms

Many excellent articles describing the clinical picture of duodenal stasis have appeared in recent years, among which are those of Kellogg,^{21,22} Duval,¹³ Pool,²⁶ DeBeule,¹⁰ Downes,¹¹ Quain,²⁷ Wilkie,³⁴ Tinkham,³³ McKenty,²⁵ Graham and Platou,¹⁵ Halpert,¹⁶ Higgins,¹⁸ Summers,³² Judd and White,²⁰ Fulcher (discussed by Balfour¹⁴), Shattuck and Imboden,²⁸ Hartsock,¹⁷ and Jewett.¹⁹

The symptoms which may be found in a moderately advanced case are the following: epigastric fullness and crampy pain in the epigastrium occurring immediately after meals in some cases, and in one to three hours after meals in others; nausea and moderate vomiting; bilious attacks with migraine headaches; weakness; anorexia; acne; weight loss approaching emaciation in many patients; constipation usually, but Duval has described several instances of "duodenal diarrhea" which may be due to forceful shooting of the duodenal contents past the obstructing point or to an increased "gradient" in both directions from the writhing duodenum or possibly due to mild pancreatitis. Vomiting and diarrhea may be seen in the same individual. Crile,⁸ Hartsock¹⁷ and a few others are so impressed with the relationship of migraine to duodenal stasis that they fluoroscope all migraine patients to rule out this condition. Remarkable relief has followed duodeno-jejunostomy, they say. Pool²⁶ emphasizes the fact that these patients invariably develop instability of the sympathetic nervous system and if unrelieved always become psychoneurotic. He thinks the duodenal stasis is primary,—not the reverse. The common symptoms are fatigability, headache, nervousness, palpitation, weakness, insomnia, anxiety, and occasionally fixed ideas of inadequacy with depression. "These psychoneurotic trends," he says, "seem to us more constant and more profound than in any other disorder of the digestive tract." If the pylorus is incompetent marked dilatation of the stomach occurs and the patient may have projectile vomiting of tremendous amounts of fluid digestive

*Discussion of paper by Pool et al.

juices, often as much as a gallon. Physical signs which may be found are distention of the right half of the epigastrium with a succession splash heard on palpating the duodenum or stomach. Many patients have discovered that relief from pain may be had by assuming the ventral, right lateral, or knee-chest positions. A complicating hemorrhagic pancreatitis or cholangitis sometimes develops due to regurgitation of duodenal fluids into the bile or pancreatic ducts. Peptic ulcer is rarely found in these patients.

Diagnosis

The age group most subject to duodenal stasis is from twenty to thirty years of age, though cases have been described from three to sixty-five years of age. The ratio of women to men usually is given as three to one.

Besides the history and physical examination, the diagnosis depends chiefly on careful fluoroscopy of the duodenum and stomach. Formerly the giant duodenum was the only type of duodenal stasis found, but in recent years, due to more frequent and more careful fluoroscopy of the duodenum, mild and moderate cases have been noted and described very frequently. I should like to emphasize here, what Kellogg,^{21,22} Pool,²⁶ Jewett¹⁹ and others have stated, that the evidence often is obtained only with fluoroscopy and that films may show nothing. In the series here reported this was decidedly true. In only one of this group were the films of any diagnostic value. Kellogg²² classified four stages of duodenal insufficiency: (a) asthenic duodenum; (b) duodenal obstruction with an incompetent pylorus; (c) duodenal obstruction with hypertrophy ("writhing duodenum"); (d) dilated duodenum. Jewett¹⁹ in an excellent article, described the fluoroscopic appearances of the duodenum as follows: dilatation of the duodenum with writhing and frequent waves of reverse peristalsis; puddling of barium in the lower loop of the duodenum; tenderness over this same area; often a six-hour retention of barium in the duodenum. The superior angle of the duodenum is seen to be high in relation to the greater curvature of the stomach. In milder cases, Duval¹³ describes only a prolonged fullness of the duodenum lasting longer than the usual six to eight seconds which barium spends

in the cap or the eight to ten seconds it normally spends in the entire duodenum. During fluoroscopy, pressure applied on the lower abdomen, upward and to the left may allow the duodenum to empty by relaxing the mesenteric obstruction of the duodenum, or having the patient lie on his abdomen may allow duodenal emptying.

Treatment

All authorities on this subject agree that not all patients suffering from duodenal stasis need be operated, and urge a preliminary trial of medical measures. These measures include the following: frequent small feedings; a weight-gaining high calorie bland diet; sedatives; antispasmodics, particularly atropine or belladonna; support of the lower abdomen by a proper corset or belt; use of the right lateral or knee-chest position frequently, especially to relieve pain. Gastric lavage may be needed toward the end of the day. Hot abdominal packs, occupational therapy, and exercises in bed to strengthen the abdominal muscles are all recommended.

Surgical treatment has varied, in the past, including severing of constricting bands or adhesions, high fixation of the hepatic flexure of the colon to the anterior abdominal wall; gastro-enterostomy; duodeno-jejunosomy. The last named operation is now universally recommended as the logical drainage for an obstructed duodenum. It was first suggested in 1900 by Petit* in France, and by Barker² in 1906 and later Bloodgood⁴ in 1907 in this country. The credit for performing the first duodeno-jejunosomy is given to Staveland^{30,31} in 1908. The loop of jejunum as it descends from the duodeno-jejunal angle is anastomosed, by a lateral anastomosis, to the dependent or third portion of the duodenum after the peritoneal covering of the latter has been opened. Further technical surgical details will not be discussed here, but are excellently described by Duval,¹³ Pool,²⁶ and Kellogg.^{21,22} Recent writers all condemn the use of gastro-enterostomy for treatment of duodenal stasis. The patients do surprisingly well post-operatively, for one of the chief causes of post-operative vomiting has been relieved. The operative mortality is less than one per cent in most series.

*Quoted by Duval.

Results

Many of the more recent writers have reported large series of duodeno-jejunostomies, with very satisfactory follow-up results. Kellogg²² reported forty-one cases, with complete relief of symptoms in thirty-six and improvement in four. Wilkie²⁴ of Edinburgh had a series of sixty-four duodeno-jejunostomies with three operative deaths in emaciated patients. A follow-up on fifty-seven of these after from one to five years showed twenty-three cures, eleven good results, twelve fair results and nine failures. He said that none of the failures were made worse by the operation. DeBeule²⁹ in 1931 reported eighty cases with excellent late results and one operative death. Duval¹³ had operated fourteen cases in 1928, with excellent postoperative results. Pool²⁶ reported eleven cases operated by himself; of these there were seven excellent results, two fair and two doubtful results. Crile* in 1933 had done twenty-one, fourteen of which he could trace; ten were improved and four were unimproved. Pool²⁶ emphasizes the fact that the findings at operation are often not conclusive, as the duodenum may be collapsed at the time. A brief summary is here included of eight patients operated by duodeno-jejunostomy, by Drs. A. R. Colvin, Robert Earl and George Earl of Saint Paul. All of these patients had been given an adequate trial on a careful medical regime for duodenal stasis. None of these patients had a giant duodenum but all could be classed as having a moderate degree of duodenal stasis on fluoroscopy, and clinically the stasis varied from moderate to severe.

Case 1.—White, male, thirty-four years of age, a street car conductor.

Symptoms were crampy pain in the lower epigastrium with a burning sensation at the navel immediately after meals or three hours after meals. No relief on spastic bowel therapy, even with bed rest. X-ray examination in December, 1930, and February, 1931, showed a very large duodenal cap and moderate associated enlargement of the rest of the duodenum with writhing and active antiperistalsis. Duodeno-jejunostomy was performed on March 2, 1931, by Dr. George Earl. Arterio-mesenteric obstruction was found. Also the pancreas partially surrounded the second portion of the duodenum. Fluoroscopy done six weeks and again seventeen months later showed a completely normal duodenum, barium passing out of the new stoma. No

stasis was present. **Check-up** on April 8, 1935, revealed a complete cure with a gain of ten pounds in weight. **Result:** "Cure."

Case 2.—White, female, twenty-four years of age, a nurse.

Symptoms were nausea and vomiting constantly for six months and periodically prior to that. Loss of thirty pounds in the past two months. There was a constant dull pain in the epigastrium which became crampy immediately after meals. Vomiting occurred in five to thirty minutes after meals and relieved the pain. Appendectomy had been done in 1925. Fluoroscopy on December 31, 1932, showed puddling in the second and third portions of the duodenum with definite dilatation and rather active antiperistalsis. Duodeno-jejunostomy was done on January 18, 1933, by Dr. A. R. Colvin. Convalescence was rather slow. Fluoroscopy on March 25, 1933, showed the new stoma functioning freely and a normal size of the duodenum. **Check-up on March 10, 1935:** The patient eats three "square meals" a day. No symptoms. Weight 112 pounds (a gain from 89 pounds before operation). **Result:** "Cure."

Case 3.—White, female, twenty-three years of age, a stenographer.

Symptoms were periodic attacks of severe nausea and vomiting of liquids and all foods intermittently for one and one-half years. Loss of twenty-seven pounds in weight. Appendectomy and later cholecystectomy had been done elsewhere for the same complaints. The patient gained twenty pounds on a medical regime but attacks persisted. Fluoroscopy on June 11, 1933, showed puddling and reverse peristalsis in the second and third portions of the duodenum. Duodeno-jejunostomy was done on September 12, 1933, by Dr. George Earl. Fluoroscopy on December 14, 1933, revealed the new stoma functioning freely and a normal calibre of the duodenum. **Check-up on March 5, 1935:** Patient weighed 140 pounds (gain of 40 pounds). No symptoms. **Result:** "Cure."

Case 4.—White, female, twenty-four years of age, a telephone operator.

Symptoms: Nervousness for a year and a half; vomiting periodically for three months; attacks of nausea intermittently for a year and a half. Weight loss of twenty-one pounds in three months (120 to 99). Fluoroscopy done at two occasions showed puddling in the dependent portion of the duodenum, with antiperistalsis. Duodeno-jejunostomy was done August 18, 1933, by Dr. Robert Earl. Appendectomy also was done because of chronic changes in this structure. Fluoroscopy on March 22, 1935, revealed the new stoma functioning well with only a momentary delay of barium at the stoma. Active reverse peristalsis was seen. **Check-up on March 11, 1935:** Patient weighs 109 pounds. She rarely vomits now but when very nervous has epigastric cramps for four to seven days at a time. Her strength is poor. **Result:** "Fair."

Case 5.—White, male, twenty-seven years of age, a bank clerk.

Symptoms included a burning sensation just above

*Discussion of paper by Pool et al.

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the navel fifteen to twenty minutes after meals, relieved by lying down. The patient had been under heavy nervous tension for over a year. *Fluoroscopy* showed slight dilatation of the second and third portions of the duodenum with active writhing and antiperistalsis and definite puddling in the dependent portion. *Appendectomy* was done on August 5, 1933, by Dr. George Earl. No relief of symptoms occurred. *Fluoroscopy* and reray one month later showed more severe duodenal stasis. *Duodeno-jejunostomy* was done on September 12, 1933, by Dr. George Earl. *Fluoroscopy* on June 18, 1934, revealed a large cap still present. No stasis. The stoma was functioning freely. No antiperistalsis was seen. *Check-up on June 25, 1934*: Cramps with heaviness at the navel were occasionally noted. Patient admitted no relief. Temporary relief only was had on an allergic elimination diet. In June, 1935, the patient admitted that he felt much improved and the fluoroscopy revealed again a very excellent physiological result. *Result*: "Good."

Case 6.—White, female, forty years of age, a beauty parlor operator.

Symptoms: Diarrhea intermittently for four months. Vomiting intermittently for ten months; weight loss from 200 to 118 in ten months; severe intermittent epigastric crampy pains occurring one to two hours after meals, lasting until she vomited. Had had appendectomy and cholecystectomy nine months previously. Adhesions with obstruction were operated soon after the first operation. *Fluoroscopy* showed 50 per cent gastric retention of the six hour barium meal. Puddling and dilatation (moderate) of the dependent duodenum but no antiperistalsis were noted. *Fluoroscopy* done three months later revealed 75 per cent gastric retention and active antiperistalsis carrying the barium into the stomach from the duodenum. *Duodeno-jejunostomy* was done on April 16, 1934, by Dr. Robert Earl. Many adhesions were found all through the area of the previous operation. The second and third portions of the duodenum were found dilated and in low position. The mesenteric vessels caused a tight obstruction across the duodenum. *Course*: The patient was moderately improved but diarrhea occurred frequently. Profuse bleeding of early menopause was present. A small ovarian cyst also was present. X-ray treatments were given to stop the bleeding. *Fluoroscopy* done on June 18, 1934, revealed a large duodenal cap with no deformity. No stasis was seen. Prompt emptying through the stoma occurred. *Check-up on April 12, 1935*: She has some arthritis but otherwise is much improved. An abscessed tooth was found and removed. *Result*: "Fair."

Case 7.—White, female, thirty years of age, a school teacher.

Appendectomy had been done sixteen years ago. Adhesions were operated three years ago and a subtotal thyroidectomy had been done in 1928. *Symptoms*: Spastic constipation for many years with pain in the right lower quadrant for many years; upper abdominal bloating and distress after eating. *Fluoroscopy* showed definite puddling of barium in the dependent portion

of the duodenum and some antiperistalsis. There was proximal colon stasis at fifty-six hours. *Duodeno-jejunostomy* and resection of the cecum and ascending colon were done on April 3, 1934, by Dr. George Earl. Marked arteriomesenteric compression of the duodenum was found. The cecum and ascending colon were involved in a mass of adhesions. The ileum and transverse colon were joined by a lateral anastomosis. *Fluoroscopy* on December 26, 1934, showed the stoma to be functioning freely. No barium went around the duodeno-jejunal angle. No ileus was seen. *Check-up in February, 1935*: The patient says she never felt better in her life. Her only complaint was mild diarrhea (due to absence of ascending colon, in all probability). *Result*: Probably "good."

Case 8.—White, female, twenty-seven years of age, an office clerk.

Symptoms: Since a severe attack of influenza ten years previous, the patient had had recurrent attacks of supposed chronic appendicitis not relieved, however, by appendectomy two years ago, elsewhere. She had crampy pain near the navel, occurring as soon as she ate and relieved only by vomiting. Loss of fourteen pounds in the two years since her appendectomy (from 110 to 96 pounds). *Fluoroscopy* showed stasis in the duodenum with active antiperistalsis. Some delay was seen in passage of barium past the root of the mesentery. *Duodeno-jejunostomy* was done on January 13, 1934, by Dr. George Earl. *Fluoroscopy* on March 1, 1934, revealed a direct and free emptying of barium through the stoma. No barium went around the natural route. No stasis nor antiperistalsis were seen. *Check-up on March 23, 1935*: Weight ninety-eight pounds. If she ate more than a light meal, she had crampy pain, nausea and vomiting. She had been working in an office all winter. The patient was enthusiastic about the result of her duodeno-jejunostomy, for she had been incapacitated for work prior to this operation. *Result*: "Fair."

Summary

In this series of eight duodeno-jejunostomies, there have been three cures, two good results and three fair results. None has failed to get some relief, though in a few cases such relief has been slow in manifesting itself. There have been no operative deaths, and none of the patients have been made worse. None of our cases belonged to the classical giant duodenum group where this operation produces spectacular results. Most of these patients before operation would have been labeled as neurasthenics or as suffering from gastric neuroses. All of them had had previous operations for the same general symptoms, without any relief. All of them failed to obtain any permanent relief on a careful medical regime lasting several months in each case.

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I believe duodeno-jejunostomy should be performed far more frequently in the future whenever duodenal stasis is found and when it fails to respond to a careful medical regime. It drains the obstructed portion of the duodenum without disturbing the physiological or digestive mechanisms of the upper gastro-intestinal tract.

Conclusions

1. A discussion is presented of chronic duodenal stasis with a review of the more important contributions from the literature on this subject.

2. Case reports are submitted of eight patients presenting moderate to severe degrees of this syndrome who failed to obtain relief on a careful and prolonged medical regime. All were subjected to duodeno-jejunostomy.

3. Follow-up contacts with all of these patients for periods varying from eighteen months to four and one-half years have shown the end-results of this operation to be the following: three are classed as cured, two as having had a good result, and three as having had a fair or satisfactory result. None were made worse and there were no postoperative deaths.

4. It is urged that more emphasis be placed on the very frequently occurring syndrome of duodenal stasis, and that when the patients fail to respond to a careful medical regime, they be subjected to duodeno-jejunostomy. This operation often secures for the patient remarkable relief of symptoms even in the absence of a "giant" duodenum.

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FRACTURES OF THE NECK OF THE FEMUR*

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MUCH of the misunderstanding in the evaluation of methods of treatment of fractures of the hip has been the result of lack of appreciation of the pathology. Fractures through the neck of the femur, true intracapsular fractures, have not been clearly distinguished from fractures through the trochanter. Whereas the former seldom unite unless properly treated, the latter almost invariably unite regardless of treatment, though malposition with shortening of the extremity is a common sequela.

The abduction method of treatment, sponsored so vigorously by Royal Whitman, gradually displaced the older methods of treatment by traction. It has long been recognized that traction by weight and pulley is inadequate. Traction combined with countertraction on the thigh so as to rotate the thigh internally, which is known as the Ruth Maxwell method, was popular in the Middle West and was sponsored in Minnesota by the late Dr. James Moore, then Professor of Surgery at the University of Minnesota. While it gave improved results over ordinary traction, the difficulty of maintaining the traction and countertraction seriously interfered with its effectiveness. Various manners of applying the Whitman type of treatment have been advanced. Whitman advised a single spica cast extending from well up on the thorax to the toes on the affected side, with the leg well abducted and rotated inward somewhat. With Whitman's method, the results, on the whole, have been reasonably good when the cardinal principles of reduction, locking of the fragments together by abduction and internal rotation, and maintenance of the position were faithfully carried out. The most accurate statistics are those collected by the American Orthopaedic Association, but even these figures are open to criticism. Inasmuch as these figures have been supplied by men experienced in the treatment of fractures, their estimate of the occurrence of bony union in about 50 per cent of fractures of the neck of the femur, in

which the Whitman method has been employed, may be assumed to be rather accurate. No mention in such a report, however, could be made of the disagreeable features incident to the treatment, such as the prolonged confinement in a cast for three months, with the wasting of muscles and the stiff knee, which often fails to limber up properly and usually causes more discomfort than the fractured hip. The death rate varied greatly in the collected series mentioned. A fairly high percentage, at least 15 per cent, of elderly people will die following a fracture of the hip. If a fracture of the hip is treated regardless of the age and condition of the patient, a high mortality will be encountered, whereas, if the surgeon withholds active treatment until it is evident that the patient will at least survive the initial shock of the fracture, the mortality will be much lower. In some of the larger metropolitan hospitals, the death rate is considerably higher than 15 per cent.

Several facts should be considered in treating fractures of the hip by the Whitman abduction method: First, about 50 per cent of the fractures of the neck of the femur so treated unite by bony union; second, the treatment is a trying ordeal for the patient because of the confinement in a cast; third, the stiff knee which almost invariably follows cannot be lightly dismissed; and fourth, the mortality, though varying in different reports, seems to be in the vicinity of 15 per cent.

The fact that bony union was obtained in only 50 per cent of the cases leads one to inquire why such a high percentage of failures occur.

The reduction of the fracture must be complete. Absolute proof of reduction can be furnished only by good roentgenograms, which should include both anteroposterior and lateral views. Clinical signs alone are not sufficient. If the fracture is not perfectly reduced, one should not be satisfied unless approximately four-fifths of the fractured surfaces are in contact. Adequate fixation to hold the reduced fragments in position must be provided and it is generally agreed that a proper fitting spica cast is the simplest and best means to secure this fixation.

*From the Section on Orthopedic Surgery, The Mayo Clinic, Rochester, Minnesota. Read at the meeting of the Northern Minnesota Medical Society, Duluth, Minnesota, August 12 to 14, 1935.

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Some patients cannot stand the treatment because their physical condition, nervous stability, or possibly both, are such that confinement in a cast for three months is entirely too much for them. Sometimes, owing to the entreaties of the patient and the family, the surgeon is induced to reduce the cast in extent, and, if this is carried too far, mobility of the hip is permitted and the fragments separate. Some fractures of the neck of the femur are so comminuted and the capsule so torn that shreds fall in between the fractured surfaces and stay there in spite of attempts at reduction, and nonunion results because there is not sufficient contact of the bony surfaces to bring about union, even though the patient is kept in the cast for the customary full three months. The uncontrollable and uncertain factor of circulation to the head of the femur is very important. Poor nourishment of the head of the femur may mean that bony atrophy at the line of fracture develops to such an extent that the fragments separate. No cast, however well applied, can absolutely prevent motion because the soft parts, the heavy muscles and fat of the buttocks, are so thick in this region.

Considerable discussion regarding the blood supply of the head of the femur recently has appeared in the literature, but I have neither time nor space to consider it in this paper. Santos published an excellent article in 1930. It appears that in a certain percentage of cases, probably 20 to 30 per cent, the heads of the femurs have no blood supply through the ligamentum teres and, consequently, when fractures occur in these cases, this source of blood supply, which I believe is a really important one, is lacking and atrophy of the head of the femur and partial necrosis are almost certain to occur.

If any better results are to be looked for than those obtained by Whitman's method, an attack on the fracture by open operation must be resorted to. Such procedures, however, must be undertaken with considerable caution. The surgeon must be qualified to perform such an operation, the operating room must be properly equipped, and the personnel must be experienced and well trained in surgical technic. The hip is difficult to operate on because it is deeply placed and surrounded by heavy muscles, and in most women by a great amount of fat.

The advice of Smith-Petersen, of Boston, that these fractures should be reduced by an open op-

eration, that each step should be visualized, and that fixation should be provided by a metal nail, has met with deserved attention. Whereas fractures of the neck of the femur previously had been treated sporadically by operation, Smith-Petersen was the first to advocate an orderly surgical attack.

In reviewing the recent fractures of the neck of the femur which have been seen at The Mayo Clinic, I found that nine of the patients had been treated by open operation, in which a beef-bone screw or peg was used to maintain the fragments in the corrected position. The reason for this type of treatment was because it was difficult to reduce the fracture and to maintain the fragments in the proper position. In almost all of these cases the capsule was found to be torn and interposed between the fragments. One patient died on the twenty-eighth day, of pulmonary embolism; the remaining eight obtained bony union. While this is a small series of cases, the results were so good that I felt that Smith-Petersen's premise was well taken and that open operation was worthy of further trial, for there did not seem to be any likelihood of improving the results with the Whitman method. Accordingly, in the last two years at the clinic, all patients who came in with recent fractures of the neck of the femur and who were considered to be good surgical risks have been treated by open operation.

With this background and experience, I now believe that surgical treatment by the open method with adequate internal fixation not only gives better results than the conservative abduction treatment, but practically does away with the cast and shortens the period of inactivity. Usually, ten days to three weeks in a short spica cast is sufficient. This does away with the stiff knee, which is a frequent sequela of fractures of the hip. The patient is allowed up on crutches at the end of that time. The clinical picture of the convalescence is such a contrast to the long, dreary, monotonous months incident to the abduction treatment in a cast that one cannot fail to be enthusiastic about the open reduction and fixation with the nail. Smith-Petersen's metal nail is large and strong, and an admirable agent to use, but other forms of internal fixation doubtless could be used. Gaenslen advised the use of two or three Kirschner wires inserted at different angles. Other ideas have been advanced

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which I will not have time to discuss today but will confine my remarks solely to the use of the Smith-Petersen nail. Some years ago, Johansson, of Gothenburg, Sweden, advocated the use

be inserted without exposure of the site of fracture. It is surprising how difficult it is to insert the nail accurately without such a guide. No trauma is produced with the wire and it can be

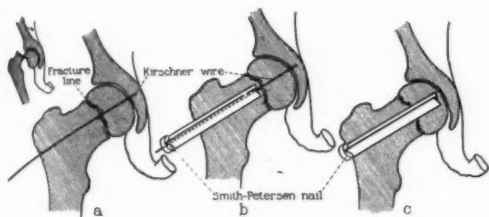


Fig. 1a. Kirschner wire *in situ* through the trochanter, neck, head and penetrating the acetabular wall. The insert represents the fracture before reduction; b, Smith-Petersen nail threaded over the wire; c, the wire removed, leaving the Smith-Petersen nail in position.

of a nail which was cannulated so that it could be threaded over a Kirschner wire previously placed in the position desired for the insertion of the nail. The position of the wire is controlled by aid of either the fluoroscope or anteroposterior and lateral roentgenograms. King, of Melbourne, Australia, advised the same method and the cannulated nail is now used at The Mayo Clinic (Fig. 1). The wire enables one to use the nail without exposing the fragments. The method erroneously has been called "blind" insertion of the nail. The nail is not inserted blindly, but is, in fact, very much controlled, for it is threaded along the wire and driven in only after the surgeon is certain that the wire is in the correct line. Smith-Petersen felt that the exposure should be adequate to enable the surgeon to visualize the fracture and make certain that shreds of capsule and fragments of bone do not interfere with the accurate reposition of the fragments. Basing my opinion on a rather limited experience with both methods, I am inclined to believe that Smith-Petersen may be right but such a major surgical procedure is safe only in the hands of the experienced surgeon. Although the insertion of the nail on the wire prolongs the operation because of the time required for the development of the roentgenogram, it causes no shock to the patient.

As already mentioned, anteroposterior and lateral roentgenograms should be made after reduction, to be certain the reduction is correct. The use of a Kirschner wire as a guide assures accuracy and is especially desirable if the nail is to

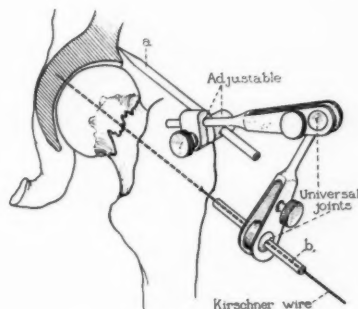


Fig. 2. Device for alignment of the guiding wire. The wire engages the acetabulum to steady the head when the nail is driven in.

withdrawn and reinserted until the roentgenograms show that it has been placed accurately. There have been many instruments and schemes advised for the alignment of the wire. The trochanter is exposed by a longitudinal incision, four inches in length, and the muscles are stripped back. A simple little device, which has been designed by my associate, Dr. H. B. Macey, is illustrated in Figure 2. This consists of several parts, one of which is a firm spike-like nail that is inserted snugly along the top of the trochanter and driven gently into the iliac wall, just above the margin of the acetabulum. The line thus established along the top of the trochanter parallels very closely the angle of the neck and the shaft. The upper arm of this device, which has a universal joint, is then slipped on the nail, and the cannulated piece on the lower arm, which also has a universal joint, is aligned in what the surgeon considers the direction the wire must take to enter in the middle of the neck and head of the femur. If this line is satisfactory, the Kirschner wire is slipped through the cannulated piece in the lower arm of the device and forced through the neck and head of the femur and into the acetabulum. The latter step is important because it steadies the head of the femur and prevents rotation as the Smith-Petersen nail is being driven in. Anteroposterior and lateral roentgenograms then are made to be sure that the wire has been placed correctly. If the wire is in the proper position, the instrument

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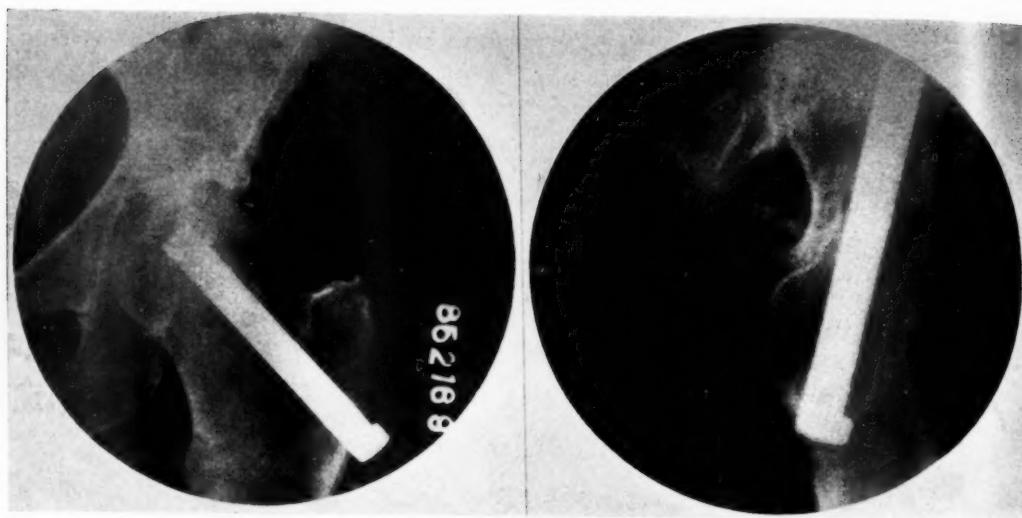


Fig. 3. Left. Nail *in situ* after ten months, with firm, bony union; anteroposterior view. Right. Lateral view.

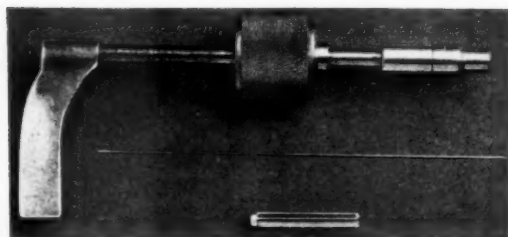


Fig. 4. Pistol grip hammer with sliding weight pounder. Kirschner wire and Smith-Petersen nail. A channel is provided in the shaft of the hammer for insertion of the wire.

is withdrawn, the wire is left in position, and the nail is driven in over the wire (Fig. 3). A special hammer is used for this purpose (Fig. 4). Measurements are made from the roentgenogram to determine the depth to which the wire is to go and also to determine the length of the nail required. Anteroposterior roentgenograms again are made to be sure that the nail has not been driven too far and does not engage the acetabulum. If it has entered the acetabulum, it should be withdrawn far enough to permit free motion of the head of the femur.

An operation of this nature is not easy. It is difficult to maintain asepsis and prevent contamination while making the roentgenograms, and the personnel of the operating room must be on the watch for any slips in aseptic technic. The development of the roentgenograms takes con-

siderable time and sometimes necessitates the patient being on the operating table for several hours. Inhalation anesthesia is dangerous for such a prolonged operation if the patients are elderly, and spinal anesthesia is preferable.

When a patient sustains a fracture of the neck of the femur, I believe that, with this new method at one's command, the ideal way to handle such a situation would be to have the patient taken to a hospital and placed on a comfortable stiff bed, apply traction to relieve the pain, and maintain as good a position of the fragments as possible. Roentgenograms should be taken in anteroposterior and lateral directions. Then one should wait at least several days, perhaps even a week or two, to see how the patient is going to react to the accident. If at the end of such a period of observation, the patient is in good general condition and, generally speaking, is considered a good surgical risk, then I believe he should be given the benefit of this new method of treatment. Such operations should only be done by those who are prepared to carry out the technic meticulously and who have the necessary physical equipment at hand, as fracture table, portable x-ray machine, instruments, and so forth.

I believe that with such management a large number of elderly patients who sustain fractures of the neck of the femur will obtain bony union, and incidentally will enjoy a more com-

fortable and easy convalescence than they would if other methods were employed.

In seven cases of recent fractures of the neck of the femur in which operation was performed at the clinic and a Smith-Petersen nail was threaded over the Kirschner wire, convalescence has occurred, and I am able to speak of both the convalescence and end-results. All of these fractures have united by solid bony union and the resulting mobility of the hip and knee is much better than that secured by the Whitman method. Six of the patients were women, who were twenty, forty-nine, sixty-four, sixty-six, sixty-seven, and eighty years of age respectively. The only male in the group was seventy-two years old.

Without reporting details of each case, it is sufficient to say that the experience of treating these patients by this method was most pleasant and in marked contrast to the conservative abduction method.

The patients were not faced, at the beginning of their treatment, with the prospect of spending three months in a cast, which always is a most discouraging outlook. They were placed in wheelchairs in a few days, the cast in most cases was removed in ten to twenty-one days, and movement of the knee started at that time.

I prefer to use a sling attached to an overhead bar so that the patient can move the knee and also the hip, while recumbent, by pulling on a rope. Weight-bearing must not be permitted until bony union is evident in the roentgenogram. Crutches can be used as early as three weeks in some cases. There has been no death in any of the fourteen cases in which the nail has been used at the clinic. In seven of these cases convalescence has been completed. In some of the other cases in which the nail has been used, there were ununited fractures, but this is a different story and cannot be discussed here. Infection did not occur, although a slough of a skin flap in a fleshy woman caused concern. The early mobility should reduce the occurrence of pulmonary embolism.

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CLINICAL NOTES ON THE RESULTS OF FEVER THERAPY IN DIFFERENT DISEASES*

Report of the Fifth Annual Fever Conference, Dayton, Ohio, May, 1935

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SOME physicians look with suspicion, not always unjustified, on anyone who uses machines in medical treatment. It is their opinion that all "machine-medicine" is tinged with quackery, that even if the deus ex machina is a benign god, he should nevertheless be considered an unorthodox deity. Fever therapy is the newest form of physical therapy. It has had its origin in the laboratories of scientists of national and international repute. Its utilization has so far been entrusted almost exclusively to physicians associated with large clinics and research institutions, men familiar with accurate methods of

clinical investigation. As yet few charlatans have been able or dared to invade the field.

Although strenuous efforts have been made to couch clinical reports in the most conservative terms, fever therapy is still enjoying its "honeymoon-period," and marked differences of opinion exist as to its actual merits. The recent Annual Fever Conference gave another opportunity for those most interested in its development to exchange clinical impressions and experiences, to level deviations of thought due to optimisms and pessimisms. In the two-day session, forty papers were presented before a selected group of 120 physicians and physicists, practically all of whom were connected with university clinics or large

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hospitals with research facilities. Two men responsible for the modern development of fever therapy were in attendance—Dr. W. R. Whitney, and Mr. Charles F. Kettering, heads of the research departments of the General Electric Company, and General Motors Corporation, respectively.

On disease processes fever therapy may have a direct influence through its bactericidal or bacteriostatic effect on certain organisms, or an indirect influence by vasodilation, by mobilization and augmentation of certain immune bodies, and by increasing metabolism. The most striking results are of course seen in those diseases caused by organisms on which fever exerts a direct effect, gonorrhea and syphilis.

Gonorrhea and Its Complications

The thermal death time of 130 strains of *Neisseria gonorrhoeae* in vitro at 106.7° F. (41.5° C.) has been found to vary between six and twenty-seven hours. Old laboratory strains are more heat-resistant than fresh cultures. A patient may be infected with more than one strain. The strains of a patient and his consort generally have about the same thermal death time. When a patient exhibits strains whose thermal death times vary rather markedly, he is probably affected by an old as well as by a new infection. Strains isolated from the urethra and from joints may have different thermal death times. Articular strains are a little less heat-resistant than urethral strains; therefore, gonorrheal arthritis may subside more readily during fever therapy than urethritis. When estimation of the thermal death time of the patient's own strain of gonococcus is possible, some⁵ advocate the application of a single, prolonged fever session of a number of hours (five to seventeen hours) at 106.7° F. (41.5° C.) equivalent to the thermal death time of the strain under treatment. Immediate subsidence of all symptoms and bacteriologic "cure" was obtained by every one of eleven patients so treated. However, similar results were obtained in several cases when the fever period was a fourth to three-fourths of the thermal death time, suggesting the assistance of defense factors in the body. Failure in cases in which sessions of fever are shorter than the thermal death time may be due to the inability of the host to supply the necessary supplemental resistance

when the bactericidal effect of the fever has been inadequate.

Since routine estimation of the heat resistance of patients' own strains is not yet practicable, most physicians favor a number of relatively short sessions of fever rather than one long session. Certain strains may become heat-resistant after a few short sessions, and partial failure may result in some cases of gonorrhea in which patients are treated less than twice a week and at temperatures lower than 106 to 107° F. In general, the results of fever therapy for gonorrhea in various anatomic sites have been excellent and, except for one dissenting opinion,¹⁷ it was agreed that it is the method of choice and almost "specific."

Gonorrheal urethritis, epididymitis, and pelvic disease.—The great majority of about ninety-five men with acute urethritis were promptly cured by a few sessions of fever (each of about five hours at 106 to 107° F.) as were also most of forty-four with acute epididymitis and several with acute prostatitis.^{1,3,7,12} Smears and gonococcal complement-fixation tests became negative. Patients with chronic infection may need supplementary local treatment. Of 118 additional patients with genito-urinary gonorrheal infection treated by one session (five to seventeen hours) of fever at 106.7° F. (41.5° C.) 80 per cent became clinically and bacteriologically negative and have remained so for three months to three years.⁵ In the treatment of gonorrhea of the female pelvis the combined use of fever therapy and either pelvic diathermy or Elliott treatments may be more effective than fever therapy alone. By the combined method of fever therapy and the Elliott regimen, one or two less treatments are necessary than with fever therapy alone.²⁷ Some workers insisted that vaginal or rectal diathermy is a more effective supplemental treatment than the Elliott regimen.⁴ Treated by a general temperature of 105° F. by fever cabinet or diathermy and a vaginal temperature of 110° to 111° F. by vaginal diathermy electrodes thirty-seven of forty-one patients became bacteriologically negative after one to three sessions. Complicating salpingitis generally subsided rapidly. In three cases in which the cervix, but not the urethra, became sterile, electrocoagulation of Skene's ducts was effective. To avoid damage to tissue, vaginal temperatures should not be greater than

110° to 111° F. When diathermy is used to raise the general temperature, the use of four rather than two external dispersive electrodes is preferable, to avoid tender indurations.

Gonorrheal arthritis.—Of a total of 143 patients with gonorrheal arthritis, about 70 per cent became symptom-free and 10 per cent received marked relief from fever therapy. In about 20 per cent of cases^{3,4,5,14,18,20,24,29,30,31} little or no relief was obtained. The results were much more marked in acute than in chronic cases. One hundred and eighteen of the 143 cases were of acute arthritis: 80 per cent of the patients were "cured," 10 per cent were markedly relieved. Of the twenty-five patients with chronic gonorrheal arthritis (of more than six weeks' duration), 40 per cent were cured, 30 per cent markedly relieved.

Syphilis

The work of Wagner-von Jauregg and others has indicated that the spirochete of syphilis is susceptible to temperatures available in fever therapy. The thermal death time of the *Spirochaeta pallida* at 102.2° to 105.7° F. (39 to 41° C.) is about 3 to 5 hours. The clinical value of fever therapy in neurosyphilis is definitely established, but current belief is that the combination of fever therapy and chemotherapy is more effective than either one alone. Many have replaced the use of malarial or other forms of fever induced by organisms with that induced by machines, and have presented statistics indicating as good or better results and a lessened mortality with the latter. Others still consider malarial fever more effective. Sufficient experience has not yet been obtained to settle the argument.

Neurosyphilis.—Regardless of the thermogenic method used, clinical remissions should not be expected in more than 50 per cent of cases.²⁸ Of a group of patients with paresis who were treated by diathermy fever and chemotherapy, in only about 25 per cent was the disease arrested as compared to clinical remissions in 49 per cent of those treated by malaria and chemotherapy.²⁸ The statistics of other workers, however, favor artificial fever rather than malarial fever.^{3,10,26} Several patients with neurosyphilis which was unrelieved by malarial therapy obtained marked improvement from artificial fever.²⁶ Varying

degrees of improvement were reported in the treatment of tabes, taboparesis, paresis, dementia paralytica, diffuse syphilis of the central nervous system, asymptomatic neurosyphilis and resistant seropositive syphilis. Forty per cent of each of two groups of patients with paresis obtained "clinical remissions" or "very good results."^{14,16} Of two groups of patients with dementia paralytica, about 70 per cent of each were "rehabilitated" by the combined use of chemotherapy and fever from electric blankets or heated, air-conditioned cabinets.^{10,27} Speech, gait, and mental symptoms were improved. The gait of tabetics is often markedly improved; that of "burned out tabetics" is not improved, but pains can generally be abolished.²⁷ In some of these diseases there was a correlation, in others none, between the clinical improvement and alterations in serologic findings. Sometimes both were improved; often the serologic findings were unchanged but the cell count and colloidal gold test were markedly improved. Observations in these cases have been continued after treatment for from six months to three and a half years. The mortality reported in the different groups varied markedly and depended chiefly on the selection of cases and on the duration of the observation time. In comparing the mortality of groups treated by artificial fever as compared to that of those treated by malarial fever, one must remember that many of the deaths, probably the great majority, are due to neurosyphilis and not to malaria or artificial fever.

Differences of opinion exist as to whether best results can be obtained when chemotherapy is given simultaneously with, or after a course of, fever sessions. Some believe the combined method is more effective when the drug is given one-half hour before a session of fever is begun. Greater diffusion of the drug is presumed. Others obtained about the same results whether the two were given consecutively or concurrently.¹⁵

Primary and early secondary syphilis.—Because of results obtained in late syphilis, and in order to prevent the occurrence of the latter if possible, the combined use of fever therapy and chemotherapy has been advocated in the treatment of early syphilis.²⁷ A minimal course is ten sessions of five hours each, at a temperature of 105° to 106° F. (40.5° to 41.2° C.). The

concurrent use of drugs with fever is preferred to their consecutive use.

Tuberculosis

Temperatures available in fever therapy do not materially affect bovine or avian strains of *Mycobacterium tuberculosis*. They have no bacteriolytic, but may exert a bacteriostatic, effect on human strains. Experience to date in thirty-four cases of pulmonary tuberculosis indicates that fever therapy is of no definite value and is in some cases harmful. Cavities are not closed and sputums do not become negative.^{2,9} Experimental tuberculosis induced in animals by human, bovine, and avian strains was not materially affected by fever therapy.^{5,8,21} Indeed many of the animals treated by fever exhibited more extensive lesions than those not so treated. Fever stimulates metabolism much as strong physical exercise does. As the latter is known to be often harmful in tuberculosis, it is not surprising that fever therapy is apparently not beneficial.²⁷ One patient with pelvic tuberculosis and one with tuberculous arthritis obtained no improvement.^{9,17} Fever therapy may have exerted a beneficial effect in two cases of tuberculosis of the urinary tract. The urine became negative and has remained so for one year in a case in which a patient had previously had one tuberculous kidney removed and tuberculous epididymitis and nephritis of the remaining kidney later developed.⁹ A patient with pyuria, hematuria, and tuberculous bacilluria, whose pyelogram and cystoscopic examination indicated early unilateral renal tuberculosis, received two courses of seven sessions of fever each (four hours at 106° to 107° F.). Subsequently, the urine and the pyelographic shadow became normal and the patient has for several months been symptom-free.²²

Chorea

Results in twenty-eight cases of Sydenham's chorea were reported.^{7,14,23,24} Each patient was subjected to from four to twelve fever sessions, each session being three to four hours at 104° to 106° F. Many were "cured," the majority were notably improved. Some had previously been unrelieved by typhoid vaccine reactions. When results were incomplete, inadequate doses of fever were held responsible. An associated rheumatic endocarditis was not a contraindication.

Subacute Bacterial Endocarditis

Results of fever therapy in eight cases of subacute bacterial endocarditis would indicate that it may prolong the patient's life and make him more comfortable for a while.^{4,12,13,24,26} Patients may have less fever and night sweats and may gain weight thereafter. Blood cultures generally remain positive and alterations in the size of the liver and spleen and in the character of the urine are generally unchanged. Death apparently is but postponed. Because of the increased velocity of the circulation incident to fever therapy the danger of increased formation of emboli is present. At least one patient died from an embolus shortly after a session of fever.⁴ It is best to treat patients with this disease before any, or many emboli appear.²⁷

"Nonspecific" Arthritis

Of 129 patients with atrophic (infectious, proliferative, rheumatoid) arthritis who were treated by fever therapy less than 10 per cent became symptom-free, about 30 per cent obtained notable relief.^{14,29,30,31} The results were in general disappointing but were better in acute cases. Of the 129 cases twenty-one were acute, 108 chronic. Ten and 5 per cent, respectively, of the patients became "symptom-free," 40 per cent and 30 per cent, respectively, were notably relieved. Similar results were reported from this clinic in sixty additional cases.⁷

Of ten cases of hypertrophic (senescent, degenerative, osteo-) arthritis, improvement was noted in only four.³¹

Asthma

Fever therapy was employed in at least twenty-five cases of intractable asthma of the intrinsic or allergic type. None of the patients had previously received appreciable relief from other measures. Many were markedly incapacitated and unable to work. Some required oxygen and had been placed in an oxygen tent. In one group of six cases, complete remissions for at least seven months were obtained with five patients treated by three sessions of fever of five hours each at 106° to 107° F.²² In another group of fourteen cases the average duration of the asthma was eight years. Six patients were "markedly improved" by two to eight sessions of fever of four to six hours each at 104° to 106°

F. The relief, however, was but temporary, remissions lasting only one to three and a half months. Further treatment induced subsequent remissions.²⁵ One worker noted no relief in three cases.¹⁴

Peripheral Vascular Diseases

In the treatment of peripheral vascular diseases by fever one should be content to produce vasodilation and not try to kill some unknown causal bacteria. Temperatures greater than 102° F. may initiate serious skin burns or provoke gangrene.^{4,7,17,31} Reduction of claudication and pain and improvement in collateral circulation were noted in three cases of thromboangiitis obliterans and in two cases of obliterative arteriosclerosis.^{4,13} Six sessions of fever, each of four to five hours at a temperature of not more than 102° F., were employed.

Ocular Lesions

Gonococcal iritis responds notably to fever therapy.²² Good results were reported in the treatment of specific and nonspecific ocular lesions of the ulcerative type,^{2,21} in iritis, in syphilitic keratitis and phlyctenular keratoconjunctivitis,²² and particularly in the exudative lesions of ocular syphilis.⁶ Evisceration of an infected eye subsequent to a penetrating wound was occasionally avoided by fever therapy.²¹ In ocular syphilis, fever therapy is best combined with chemotherapy. Optic atrophy is not a contraindication to hyperpyrexia.⁶

Staphylococcal Infections

Staphylococci are not killed even by the application of 100 hours of heat at 106.7° F. (41.5° C.). Staphylococcal infections would thus seem to be impervious to fever therapy. However, a diabetic patient with an apparently hopeless case of staphylococcal septicemia was reported as having recovered after fever treatments prescribed in desperation.²¹

Miscellaneous Conditions

At this stage in the development of hyperpyrexia it is natural to try it in a large number of conditions in order to define the limits of its usefulness. Swapping experiences in informal discussions, the conferees noted the admittedly preliminary results of fever therapy in a miscellaneous number of conditions.

Results in a very few cases of the following diseases were sufficiently promising to suggest further clinical trial: sciatic neuritis,^{3,14} multiple sclerosis, toxic infectious psychosis, osteomyelitis, undulant fever, and psoriasis. "Satisfactory remissions" were induced in more than 50 per cent of seventeen cases of multiple sclerosis.^{3,14} In one such case in which there was marked generalized paralysis unimproved by other measures, a notable if temporary remission was induced by each of a series of ten daily sessions of fever.²³ Two workers reported rapid recovery of a few patients with toxic infectious psychoses after two sessions of fever each.^{3,26} Since spontaneous cures occur and the disease is often of short duration, another worker doubted the value of fever therapy.²³ In cases of osteomyelitis with free drainage fever therapy may lessen the discharge and hasten recovery. When infection is walled off such treatment may do harm.^{10,21} Six patients were benefited. In two of the cases with intractable osteomyelitis of the facial bones, rapid recovery ensued after several sessions of fever. A marked recurrent hydro-arthritis associated with undulant fever was stopped thereby.²⁶ One patient with intractable generalized psoriasis and erythroderma unrelieved after seven months of hospital care obtained a notable remission after seven sessions of fever.²

It was noted that in the literature there are about fifty reports of cases in which malignancy notably regressed, either spontaneously or after intercurrent fever.²⁷ It was suggested that in certain cases of inoperable malignant growths roentgen therapy combined with fever therapy may give better results than roentgen therapy alone. Recalcification of bone and complete absence of disability, so far for eight months, has followed such combined treatment in one case of osteogenic sarcoma proved by biopsy.²¹ One patient with extensive cancer of the lung is still alive three years after such treatment.⁴

Preliminary observations would indicate that no appreciable effects are to be expected from fever therapy in the following: pyelitis,¹⁴ glomerulonephritis,¹⁷ epidemic encephalitis,³ or Parkinson's disease.¹⁴ From two to five patients with each disease have been treated.

Rheumatic carditis and controlled diabetes do not contraindicate the use of fever therapy. Pregnancy may or may not be a contraindication.

Whereas one pregnant woman treated for a severe associated pelvic gonorrhea died after fever treatment, several other pregnant women whose associated gonorrhea or syphilis seemed to demand fever therapy in due course delivered normal healthy babies. In selected cases, therefore, pregnancy is not a contraindication.²⁷

Management of Patient During a Session of Fever

Careful management of the patients during sessions of fever will make them more comfortable and lessen or prevent the side reactions to fever, such as restlessness, nausea, vomiting, tetany, with muscle cramps and pain, and heat prostration. Many of these symptoms are due to depletion in water and chlorides. It is customary to give the patient 2 to 6 liters of ice cold 0.6 per cent saline solution during sessions. This prevents loss of chloride and often prevents nausea. Some workers believe that less nausea occurs if a 0.3 per cent saline solution is used,² but it is believed that at least 90 to 100 c.c. of fluid per kilogram of body weight, containing at least 20 to 30 grams of sodium chloride, should be given.²⁰ If nausea and vomiting occur, they are usually stopped by the intravenous injection of 500 c.c. of a 10 per cent glucose solution⁷ or by the oral use of dilute hydrochloric acid.² The milder sedatives (codeine, nembutal, and sodium amytal) are preferable to the stronger ones (morphine, pantopan, and dilaudid), which should be reserved for the more difficult cases; less vasomotor depression results.⁷

For the occasional tetany, muscle cramps, or pain, the intravenous administration of 1 or 2 gm. of calcium gluconate is prescribed.^{1,27} If this does not give prompt relief the administration of carbon dioxide and oxygen is most helpful.⁷ A reduction in the tendency for nausea and tetany to develop can be obtained by feeding the patients fairly large doses of calcium and sodium chloride between sessions of fever.^{3,27}

The appearance of herpes labialis can generally be prevented by anointing the patients' lips with ammoniated mercury ointment (U.S.P.) repeatedly during the sessions.²

Untoward Reactions

Numerous physiologic studies have shown that the amounts of fever generally prescribed do not harm patients. Electrocardiographic studies,

for example, show no significant cardiac alterations. By now many hundreds of patients have been so treated. Only a very few deaths attributed to uncontrolled hyperpyrexia have been reported. In one series of 400 patients treated by a trained personnel no disasters were encountered.²⁷ Impending cardiovascular collapse can generally be recognized by the presence of a persistent pulse rate of 160 or more, and one of poor quality. In such cases the session of fever should be stopped or the fever temporarily reduced. If marked vasomotor depression or collapse occurs, 100 c.c. of 50 per cent glucose solution should be given intravenously, and caffeine or epinephrine as necessary. The inhalation of oxygen and carbon dioxide is helpful. A blood transfusion may be useful.²⁷

An occasionally serious and even fatal reaction is probably inevitable, as the administration of five to eight hours of fever at 106° to 107° F. puts some patients close to the borderline of disaster. Only three deaths were reported at the conference. A patient with multiple sclerosis died in vascular collapse thirty-six hours after the fifth session of fever. Previous sessions had been well tolerated. Cerebral and pulmonary edema, and focal necrosis of the liver, but normal suprarenal glands, were found at necropsy.¹³ A patient with neurosyphilis tolerated ten sessions well; after the eleventh session, coma, hemiplegia, and death ensued. A pregnant woman with acute gonorrheal salpingitis apparently tolerated three sessions well. Twitching spells developed during the week thereafter, and on the tenth day after the third session convulsions, coma, and death resulted. Necropsy in these two cases revealed hemorrhagic pneumonia, hemorrhagic encephalitis, and marked degeneration of the suprarenal cortex (zona fasciculata) and of the liver and kidneys. The pregnant woman also revealed degeneration of chorion, with intrauterine hemorrhage.²¹

Only 50 per cent of twenty dogs subjected to from seven to nine hours at 108° to 109° F. died. The lesions approximated those just noted: engorgement of blood vessels, hemorrhages, and degeneration. In view of the fact that sodium amytal produces marked vasodilation, perhaps it might be best to avoid its use in conjunction with temperatures already producing a marked similar effect.²¹

Conclusions

To date fever therapy, an essentially safe procedure when supervised by physicians and nurse-technicians trained in its administration, is chiefly of value for the venereal diseases, gonorrhea and syphilis, diseases in which actual bacteriolysis or destruction of the invading organisms can be accomplished. Further observation may indicate it to be very useful in certain other conditions also. The presentation of these preliminary observations on its use in a few cases of a wide variety of diseases should not foster unwarranted claims or lead to its haphazard administration, but it will indicate the trend of investigation and current opinions as to its field of usefulness.

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SUCCESSFUL TOTAL CYSTECTOMY FOR RECURRING CARCINOMA OF THE URINARY BLADDER

With Notes on Some Very Large Vesical Tumors

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TOTAL cystectomy for carcinoma of the urinary bladder is not common. Between 1924 and 1934, at The Mayo Clinic, there were 902 cases in which a clinical diagnosis of carcinoma of the bladder had been made and appropriate treatment instituted, but the procedure was carried out in only ten cases.

The surgical treatment of carcinoma of the bladder is dependent on the size of the tumor, its location, its degree of malignancy, the condition of the kidneys, and the condition of the patient. Transurethral fulguration of small localized tumors of a low degree of malignancy has been followed by good results. The operative risk is low, and periods of hospitalization and disability are extremely short.

Suprapubic exploration with segmental resection is the procedure of choice for large tumors involving resectable portions of the bladder, whereas transvesical electrocoagulation of tumors

involving the base of the bladder and the ureteral orifices has, in many cases, been followed by surprisingly good results. Such treatment has resulted in satisfactory palliation, and in prolongation of life and relief of symptoms in many cases, beyond that reported in cases of total cystectomy. The operative risk in the former procedure is less than 10 per cent as contrasted with a mortality of from 25 to 30 per cent reported in cases in which ureteral transplantation to the sigmoid and total cystectomy have been carried out. The risk is not in total cystectomy, but in ureterosigmoidal transplantation, in cases in which patients are suffering from a malignant process that has produced obstructed infected kidneys. If bilateral external ureterostomy is performed (an operation of little risk), total cystectomy is a relatively safe procedure. If the ureters are dilated, bilateral external ureterostomy is the indicated procedure, since such ureters cannot usually be safely transplanted into the sigmoid.

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A palliative cystostomy, with implantation of radium, has occasionally resulted in a surprising improvement and, in some cases, in three-year or five-year cures. If the growth is resectable and yet involves one of the ureteral orifices, the ureter may be reimplanted into the bladder, or ligated and dropped back, a procedure which results in the symptomless atrophy of the kidney in the absence of marked infection. Counsellor and one of us (Walters) recently reported a series of 600 malignant tumors of the bladder in which a five-year cure was obtained in 28 per cent of the cases.

Total cystectomy is not often indicated. Extensive tumors involving the whole bladder, but without extravesical metastatic involvement, can probably best be treated in this manner. Repeatedly recurring or multiple tumors which are beginning to spread despite adequate treatment occasionally require such a procedure. If the carcinoma has involved the ureteral orifices, resulting in hydro-ureter and hydronephrosis, complete removal of the bladder preceded by bilateral external ureterostomy may result in a cure.

Report of Cases

Bilateral External Ureterostomy Followed by Total Cystectomy

Case 1.—A man first came to the clinic in August, 1931, complaining of pain in the left costovertebral angle and intermittent hematuria of eight months' duration. Severe dysuria and terminal tenesmus accompanied by nocturia recently had developed and some tenderness and soreness over the pubis had been noted also. On physical examination there was a small adenoma in the thyroid gland, a moderately enlarged prostate gland, and tenderness over both kidneys. Laboratory examination revealed the urine to be full of pus, blood, and albumin. The blood urea was 40 mg. per 100 c.c. The phenolsulphonphthalein test indicated a 50 per cent excretion in two hours. On cystoscopic examination, numerous pedunculated tumors were visualized in the bladder; intravenous urograms revealed the outlines of the kidneys to be normal. Suprapubic exploration was performed, and all of the small tumors were removed or destroyed by diathermy. The pathologist reported each of the thirty-six tumors removed, which varied from 5.5 to 1.5 cm. in diameter, to be squamous-cell epitheliomas of grade 1. Postoperative convalescence was uneventful.

The patient returned in four months with a small suprapubic urinary sinus and two questionable areas of recurrence in the bladder. Because of his good general condition and reluctance to undergo further operative procedures, only the urinary infection was treated.

The patient returned again in six months, and sev-

eral minute areas of recurrence in the dome of the bladder were destroyed by electrocoagulation. The persistent suprapubic sinus was excised and the wound was closed. Some inflammatory and cicatricial obstruction had occurred at the right ureteral orifice and that ureter was dilated. Treatment of the urinary infection was only partly successful because of the hour-glass deformity secondary to the first operation.

Six months later, reexamination disclosed another recurrence of tumor. Further operation was advised, but the patient decided to go home. He returned again in six months, however, and the areas of recurrence were a little larger. The bladder had contracted and about 50 c.c. of residual urine was present. The recurrent growths were fulgurated.

The next two examinations were also six months apart, and each time multiple recurring growths were destroyed by electrocoagulation.

In January, 1935, the patient was readmitted with recurrence of all of his old symptoms. His general condition was good and he had not lost weight. Cystoscopy revealed a small, contracted bladder with marked chronic cystitis and multiple tumors involving most of the bladder. Hugely dilated calices, pelvis, and ureters were visualized in the intravenous urograms. Because of the ureterectasis, bilateral external ureterostomy, to be followed by total cystectomy, was performed. The ureters were brought extraperitoneally through inguinal incisions. Five weeks later the bladder and the distal stumps of the ureters were removed completely (Fig. 1); the peritoneal cavity was opened, but no evidence of carcinomatous extension was found. The postoperative convalescence was essentially uneventful and the patient was dismissed from the hospital on the twenty-first day after operation. He was equipped with a belt and rubber bottles which collected the urine draining from the ureterostomy tubes. He was dismissed from the clinic on the thirty-second day after operation in good general condition.

The large size of the ureters and the associated hydronephrosis made transplantation of the ureters to the rectosigmoid inadvisable at this time. Later, if as a result of complete relief of the ureteral obstruction (due to the vesical carcinoma) by external ureterostomy, the ureters, pelvis, and calices decrease to normal size and resume their neuromuscular activity, it is possible that the ureters can be transplanted to the sigmoid. It is interesting to note that the grade of malignancy of the vesical tumors was the same at each of the seven biopsies.

Suprapubic exploration is carried out in all cases of vesical tumor not amenable to transurethral fulguration, even though the cystoscope or cystogram demonstrates the lesion to be extremely large. The following case forcibly brings out the point that a very large tumor may, on cystoscopic examination, appear to involve a

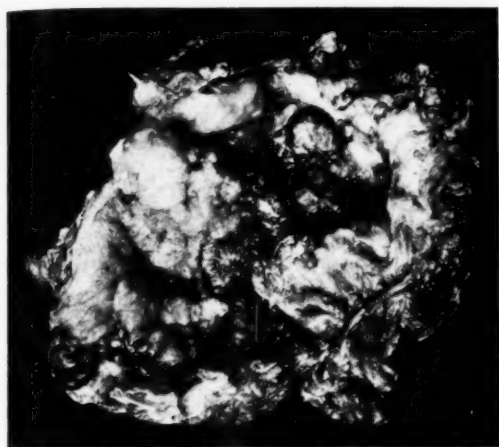


Fig. 1. Case 1. Total cystectomy for carcinoma.

large portion of the bladder, yet may have a small pedicle and be removed easily and completely by transvesical excision.

Case 2.—A white man, aged fifty-five years, came to the clinic, complaining of pain in the hypogastrium and dysuria, of sixteen months' duration. At the beginning of his trouble he had noticed mild dysuria, with hematuria at the end of micturition. Cystoscopy had been performed and he had been told he had a tumor of the bladder. Improvement in his symptoms had not resulted from some electrical treatments given elsewhere. Two subsequent cystoscopic examinations at different hospitals had led to the same diagnosis. He had been treated for diabetes. He had lost 70 pounds (31.8 kg.).

On physical examination, at the clinic, he appeared to be undernourished. Moist râles were present at the bases of both lungs and there was tenderness in the suprapubic region. Laboratory investigations revealed the urine to contain albumin, grade 3, erythrocytes, grade 3, and pus cells, grade 4. There was no anemia, but there were 20,000 leukocytes per cubic millimeter of blood. The blood urea, blood sugar, and the carbon dioxide combining power of the blood plasma were normal. The flocculation test for syphilis was negative. Roentgenograms of the abdomen were essentially negative. Cystoscopic examination revealed a large friable tumor that apparently involved the whole dome of the bladder. Specimens of the tumor for biopsy were reported to be squamous-cell epithelioma, grade 4. Intravenous urograms revealed that the calices and ureters were dilated, grade 3, on both sides.

The bladder was exposed through a low midline incision. The tumor, which practically filled the bladder, was attached by a narrow pedicle to the dome. It was removed completely (Fig. 2) and the base of the pedicle was destroyed by diathermy. There were no other areas of involvement and the wound was closed, leaving a No. 30 catheter in place for drainage.



Fig. 2. Case 2. Squamous-cell epitheliomas of the bladder, grade 4.

Postoperative convalescence was uneventful and the tube was removed on the sixteenth postoperative day. The bladder was drained by a urethral catheter for three days and, after its removal, the wound remained dry. The patient was dismissed from the hospital on the twenty-third day and from the clinic on the twenty-seventh day after operation.

Summary

A case of successful total cystectomy for extensive recurring vesical tumors is reported. Preliminary bilateral external ureterostomy was performed rather than ureterosigmoidal transplantation because of the large size of the ureters and the associated hydronephrosis.

The value of suprapubic transvesical exploration in all cases of large vesical tumors is emphasized in Case 2. In this particular case a very extensive tumor, which almost filled the bladder, was found on cystoscopic examination. The lesion was of doubtful operability. At exploration, however, the tumor was found to have a very small pedicle and lent itself very readily to successful removal.

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PROSTATIC MASSAGE OR RESECTION?*

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CONFRONTED by a border-line case, the surgeon probably leans to the radical surgical treatment, while the internist is inclined to champion conservative methods. It is well that such an imbalance exists because it enables the profession to steer a middle course in therapy and leaves the patient as the beneficiary of a situation which insures sound judgment and wise treatment. In this regard, one of the most controversial subjects in the field of medical practice probably has been the treatment of the patient who is suffering from symptoms which are referable to his prostate gland. Unfortunately, a large majority of these patients suffer from symptoms which may well be attributed to obstruction from hypertrophied prostatic tissue, to obstruction of an inflammatory nature, or to simple inflammation with no obstruction. To distinguish these conditions requires careful examination, which most often should include cystoscopy, coupled with a good deal of experience on the part of the examiner. Not infrequently, however, even in the most expert hands, border-line cases furnish real problems in diagnosis. It is with these cases that this paper is concerned.

The older literature abounded with articles by ultraconservative men. Some of these articles demanded that prostatectomy should be abandoned, and maintained that most prostatic obstruction had an inflammatory basis and that massage and catheter drainage would relieve it. Within the last two decades, this teaching has gradually lost ground, as the pathology of prostatic disease has become better known. At present, the trend of opinion is that in cases in which there is definite lobar enlargement of the prostate, or in which cystoscopy reveals sclerosis of the vesical neck or the formation of a bar, which is sufficient to account for the symptoms and the residual urine, the removal of the obstructing tissue by some surgical method is the procedure of choice. Lobar hypertrophy usually does not present any difficulty in diagnosis. While the bars and contractures are not so easily diagnosed

as is simple lobar hypertrophy, the diagnosis is not difficult. These bars and contractures may give rise to marked obstruction with residual urine, which may or may not be infected, or they may produce marked frequency of micturition, and nocturia, with a clear urine and no residual urine. Their cystoscopic picture is definite, their diagnosis is easy, and their removal gives very good results. In several cases in which urinary obstruction has led to a catheter life, operation has disclosed only a median bar, and the removal of about 2 gm. of tissue by transurethral prostatic resection has relieved the symptoms completely. Another interesting example is the patient, often between forty and fifty years of age, who has a normal urine but complains of some difficulty of micturition, such as marked frequency, nocturia, and an inadequate stream. There usually is little or no residual urine. Resection of a median bar frequently relieves these symptoms completely.

There remains, however, a large group of cases that cannot be placed in these definite classes. This group includes the cases in which there are indefinite bars, contractures of the neck of the bladder, very slight lobar hypertrophy, or chronic cicatricial prostatic urethritis. Those physicians who do considerable urologic diagnostic work are aware that all prostatic disease cannot easily be sorted into two definite groups, namely obstructive and inflammatory. Histories often are misleading and a patient whose history seems to indicate a definite obstruction, at cystoscopic examination may be found to be suffering from chronic cicatricial prostatic urethritis. A typical history is of interest.

A man, aged sixty years, consults his physician, complaining of urinary trouble. He says that for the past three or four years he has had increasing difficulty in passing his urine; the stream has been slow and there has been dribbling at the end of micturition. The stream often has been difficult to start. He has had a gradually increasing nocturia and frequency during the day, until he now is getting up four or five times at night, and is voiding every one and

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a half to two hours during the day. There also is some urinary burning and urgency. He volunteers the information that he does not feel as if he is emptying his bladder. Examination of a centrifugalized specimen of urine shows pus, grade 3. Rectal examination reveals that the prostate gland is firm and enlarged about 1+ (on a basis of 1 to 4) and a check of the prostatic secretion shows pus, grade 3. On checking the residual urine, it is found that a number 18 soft rubber catheter does not pass easily but there is no difficulty in passing a number 16 soft rubber catheter with a Coude tip. Seventy-five cubic centimeters of residual urine is found, which reveals leukocytes, grade 2, forty cells to the high power field.

Up to this time, the impression of the examiner has been that he probably is dealing with a definite prostatic obstruction, but certainly a cystoscopic examination must be done before the diagnosis is assured. At cystoscopy, there is some difficulty inserting the number 24 French cystoscope, and the examiner obtains the sensation of a tight and fixed prostatic urethra. This time, 90 c.c. of residual urine is found to be present. If the direct Braasch cystoscope is used, which is the one that is used routinely at the clinic for diagnosis of pathologic changes of the vesical neck, the picture will be somewhat as follows: The bladder is normal except for a mild trabeculation in scattered regions. The prostatic urethra is fixed, making it very difficult to manipulate the cystoscope, but there is no definite projection of prostatic tissue into the urethral lumen. The walls of the bladder seem to be flush with the prostatic urethra. Although the posterior lip of the neck of the bladder seems elevated, just as it is in the presence of a median bar, it is noticed that the ureteral orifices and ureteral ridge are on about the same level as the neck of the bladder, and very close to it, making it practically impossible to remove any tissue without cutting into the trigone of the bladder. This rules out the possibility of a bar. The cystoscope is next drawn out as far as the verumontanum, revealing a granular, rather ragged-looking urethral lumen, with some dilated prostatic ducts and an inflammatory or cicatricial looking verumontanum. The diagnosis here is obvious, namely, a chronic granular and cicatricial prostatic urethritis, which so commonly affects elderly men and produces practic-

ally the same symptoms as does hypertrophy of the prostate. The patient receives prostatic massage and irrigations of the bladder two or three times weekly, and possibly receives one or two dilatations of the posterior urethra. The symptoms disappear or are controlled satisfactorily. A large number of such patients are seen at the clinic and the results with conservative treatment are entirely satisfactory.

There is no doubt that some of these patients who obtain fair results with conservative treatment, later have an exacerbation of their symptoms and eventually require resection of a small amount of tissue in the vesical neck. Case 4, in the reports to follow, is illustrative of such a result.

Now consider the same history cited above but with different cystoscopy findings. This time it is noticed that the walls of the bladder are not entirely flush with the prostatic urethra and there may seem to be just a thin marginal curtain of intervening tissue between the bladder and prostatic urethra. Or, the posterior vesical lip may be elevated, forming a small median bar. The ureteral ridge is found to be at a considerably lower level than the posterior vesical lip and there may be a moderate bas-fond. From his experience, the cystoscopist feels that there is some obstruction present, which would indicate a bar, grade 1 or 2, or a contracture of the neck of the bladder of the same grade. However, because of its mild nature and the associated cicatricial granular prostatic urethritis, it is difficult to decide whether the difficulty is primarily obstructive or primarily inflammatory. The percentage of cases in which the cystoscopist will find himself in this quandary after cystoscopy will vary inversely with the amount of his cystoscopic experience, but no matter how voluminous his experience may become, he always will have plenty of such cases if he is conscientious and considerate only of the welfare of the patient.

A good number of cases that fall into this doubtful class are seen each year at the clinic. Our feeling in this matter is "when in doubt, give conservative treatment a trial first." Our procedure is to treat these patients with rather vigorous prostatic massage. Following this, the bladder is washed with a 1 to 8,000 solution of potassium permanganate. Two or three treatments are administered weekly for from two

weeks to a month or more. If the prostatic urethra is very cicatricial, the urethra is dilated once or twice. If there is an associated chronic pyelonephritis, it is treated with the ketogenic diet and acidification of the urine if the infection is of the bacillary type, or with two or three small doses of neoarsphenamine at intervals of five or six days if the infection is the result of cocci. If the symptoms do not show signs of remission and if the amount of residual urine does not diminish appreciably in this time, the inflammatory element is considered of secondary importance to the obstructive element and, therefore, the neck of the bladder is resected with the transurethral operation. The amount of tissue removed usually is very small, and ranges from 1 to 3 gm. in weight. Following this, the patient nearly always empties the bladder completely and the symptoms are controlled adequately. After a month or six weeks, prostatic massage may be instituted again if any symptoms persist, but usually this is not necessary.

During 1934, transurethral prostatic resection was performed in twelve such border-line cases in which a preliminary course of conservative treatment had failed to give relief of symptoms. One of these patients did not have any residual urine and one patient had only 15 c.c. of residual urine at the time of examination, but had had two attacks of acute retention. The rest of the patients carried from 30 to 200 c.c. of residual urine.

Questionnaires which were sent to these twelve patients brought response from all. Eight patients were more than satisfied with the results of their operations. A few still had nocturia and had to urinate one to three times each night, but aside from this, the urinary function was practically normal. Two patients still had symptoms of urinary obstruction. One of these was the only patient in the series who had not had any residual urine to begin with. He still complains of an inadequate stream, though the nocturia has improved somewhat. The other patient had 100 c.c. of residual urine when he came to the clinic. At that time he complained of marked urinary frequency every two hours, urinary urgency, and nocturia, which forced him to void one to two times each night. When he left the clinic, he did not have any residual urine but he now reports that the stream is no better than it was before the operation and that the urgency and

frequency have increased somewhat. Two patients were moderately improved. One of these reported that although his stream still was somewhat interrupted and not as large as he would like to have it, there was not any discomfort while voiding, the frequency during the day had decreased from hourly micturition to normal frequency, and the nocturia had been reduced so that he had to void only three times each night, instead of six times, as formerly. The other patient reported that the frequency during the day had decreased so that at the present time he was voiding seven times daily, instead of every hour as formerly. He was voiding four times each night, instead of six or seven times as formerly. The caliber and force of his urinary stream, however, were very slightly improved.

In answer to the question regarding the amount of residual urine present, only one patient had had a recent examination. This was the patient in case 7, who was the only patient who was allowed to leave the clinic while some residual urine still was present. He reported that the amount of residual urine was 30 c.c. There was 200 c.c. of residual urine at the time of his registration at the clinic. From the answers to the questionnaires, it can be assumed that all of these patients probably are emptying their bladders completely.

The results, as tabulated from the replies to the questionnaires, are listed in Table I. All in all, the results can be considered exceptionally good when one considers the chronicity of the condition.

For resecting these small glands, the Braasch-Bumpus resectoscope serves admirably. Resection should be wide enough to get down to the vesical fibers around the entire circumference of the vesical neck. With the cold cutting knife, this may be done accurately without any danger of deep burned portions sloughing later. The details of the technic have been fully described elsewhere. In these cases, it often is unnecessary to coagulate with the multiple needle electrode prior to removing each piece of tissue with the cold knife.

As will be seen from the summary of these cases, the pathologic diagnosis usually given in routine examination was adenofibromatous hyperplasia. However, the preponderance of the tissue usually is of the fibromatous or scar tissue type, and considerable areas of round cell in-

PROSTATIC MASSAGE OR RESECTION—EMMETT

TABLE I. RESULTS ON TWELVE CASES BEING REPORTED

Size of urinary stream	Condition of urinary flow	Amount of pain or burning on micturition	Number of times necessary to void in daytime	Nocturia
Good	Freely	None	Normal	None
Good	Good	None	7 to 8 times	1 to 3 times
Fair	Slow	None	Normal	1 to 2 times
Good	Freely	None	Normal	None
Good	Freely	None	Normal	2 to 3 times
Fair	Freely	None	Normal	1 to 2 times
Good	Freely	Very little	Normal	1 to 2 times
Good	Freely	None	Normal	1 to 2 times
Poor	Interrupted	None	7 times	4 times
Poor	Interrupted	Very little	7 to 8 times	2 to 3 times
Fair	Interrupted	Moderate	Every 30 minutes	3 to 4 times
Fair	Interrupted	None	Normal	2 to 3 times

filtration often are present. The tissue usually cuts with more resistance than does the tissue of the ordinary prostatic hypertrophy.

In this type of case, the surgical risk is slight. In spite of the prostatitis, if the resection is done widely enough so there is no straining afterward to urinate, there is practically no postoperative rise in the temperature. In these twelve cases, six of the patients did not have any increase in the temperature, three patients had an elevation to 100° F., one to 99.6° F., and two to 99.2° F. In most cases, the patients stay in the hospital from four to six days.

Report of Cases

The clinical histories of six of the cases in this series follow:

Case 3.—A white man, aged sixty-four years, complained of occasional slowness in starting his urinary stream. This had been noted for several years, but had increased in severity for a few weeks before his registration at the clinic. Acute urinary retention, which had necessitated catheterization, had developed two weeks before he came to the clinic.

When the patient was first seen at the clinic, he was voiding a fairly adequate stream. Examination revealed only 10 c.c. of residual urine. The voided urine contained leukocytes, grade 1. Rectal examination revealed a hypertrophy of the prostate, grade 1. The prostatic secretion disclosed leukocytes, grade 3, on a basis of 1 to 4.

Cystoscopic examination revealed chronic granular prostatic urethritis with dilatation of the prostatic ducts; bilateral, intra-urethral prostatic hypertrophy, graded 1+; and a median lobe, graded 1. The bladder was normal. The vesical urine, which was obtained by

catheterization, contained leukocytes, grade 1, but there was no growth on culture. The ureters were not catheterized.

Conservative treatment, consisting of prostatic massage and vesical lavage was administered for three weeks. The results of this treatment were only fair. The patient left to continue this treatment at home, but three weeks later acute retention recurred and he returned to the clinic.

A transurethral resection was done at this time, and tissue which weighed 3 gm. was removed. The pathologic examination revealed adenofibromatous hyperplasia. The period of hospitalization was nine days.

At the time of his dismissal from the clinic, the patient was voiding freely, had no residual urine, and felt satisfied with the results of the operation.

A response to a letter of inquiry stated that his stream is fairly adequate, rather slow, but is not interrupted. There is no difficulty in starting the stream. There is not any frequency, urgency, or burning on urination. He reported that he has to void one to two times each night.

Case 4.—A white man, aged fifty-four years, had had urinary frequency, urgency, and burning, and difficulty in starting his stream for three or four years.

Examination revealed no residual urine. There was a prostatitis, grade 4. The voided urine contained leukocytes, grade 1.

Cystoscopic examination revealed a median lobe, grade 1+ to 2; chronic granular prostatic urethritis, grade 2; and areal cystitis, grade 1. The vesical urine, which was obtained by catheterization, contained leukocytes, grade 1, and culture revealed *micrococcus*. The ureters were not catheterized.

Conservative treatment was advised and the patient was treated at home for seven months with prostatic massage and vesical lavage, twice weekly, with one rest period of six weeks. He returned to the clinic at the end of this time; he had not obtained any relief

of the former symptoms and had 30 c.c. of residual urine.

A transurethral resection was done, and a small median bar was removed. The tissue which was removed weighed 2.5 gm. Pathologic examination revealed adenofibromatous hyperplasia. The patient was hospitalized for only four days. At the time of his dismissal from the clinic, he was voiding an adequate stream and the urine was crystal clear.

A response to a letter of inquiry stated that his stream is of very good size, flows freely, and that there is not any urinary urgency, frequency, or burning. There is not any nocturia.

Case 5.—A white man, aged forty-four years, for several months had been subject to urinary frequency and urgency, pain in the lower part of the back, nocturia which had caused him to void four to five times each night, and a gradual loss of strength.

Examination revealed 60 c.c. of residual urine. There was a prostatitis, grade 4, and rectal examination revealed that the prostate was normal in size. The voided urine contained leukocytes, grade 3.

Cystoscopic examination revealed chronic granular prostatic urethritis; a median bar, grade 1 to 1+; and an areal cystitis, grade 2. The urine, which was obtained by vesical catheterization, contained leukocytes, grade 3, and the culture revealed *Escherichia coli*. The urine, which was obtained by catheterization of the right ureter, revealed leukocytes, grade 1, and that which was obtained by catheterization of the left ureter revealed an occasional leukocyte. Culture of both specimens showed *Escherichia coli*.

Conservative treatment was instituted; this consisted of prostatic massage, vesical lavage, administration of a ketogenic diet, and acidification of the urine with ammonium chloride. This treatment was continued for seventeen days and the patient was much improved, but because of the persistence of 30 to 60 c.c. of residual urine, the infection could not be eradicated. A small median bar was removed by transurethral resection to eradicate the residual urine. The bar proved to be very fibrous and tough. The tissue which was resected weighed 2 gm. Pathologic examination disclosed adenofibromatous hypertrophy. The patient was hospitalized for only four days.

At his dismissal from the clinic, the patient was voiding freely, and did not have any residual urine or other symptoms of prostatic obstruction.

A response to a letter of inquiry stated that he has a very good stream, which flows freely. There is not any urinary burning, frequency, or urgency, and he has to void only two to three times at night.

Case 6.—A white man, aged fifty-nine years, had had a stricture of the urethra ever since he had had an attack of gonorrhea when he was sixteen years of age. Sounds had been passed repeatedly. He complained of a slow stream, urinary burning and urgency, and nocturia. His urethra was dilated with sounds, and the prostatitis, which was graded 4 was treated with massage and vesical irrigations. He improved as a result of a ketogenic diet, and was sent home.

Two years later he returned to the clinic and com-

plained of the same symptoms. Examination at this time revealed 30 to 60 c.c. of residual urine. There was a prostatitis, grade 4. The voided urine contained leukocytes, grade 2. Rectal examination revealed a hypertrophy of the prostate, grade 1.

Cystoscopic examination disclosed a stricture of the posterior urethra, and a median bar, grade 1+. The bladder was normal. The vesical urine, which was obtained by catheterization, revealed leukocytes, grade 2, and the culture disclosed *Escherichia coli*. The ureters were not catheterized.

Conservative treatment was again instituted; this consisted of dilatation of the stricture, prostatic massage, and bladder lavage, for ten days. However, the residual urine and the other symptoms persisted.

Therefore, transurethral resection of the small median bar was performed. The tissue which was removed weighed 2 gm. Pathologic examination revealed adenofibromatous hyperplasia. The period of hospitalization was four days.

At the time of his dismissal from the clinic, the patient was voiding freely, did not have any residual urine, and the other symptoms were entirely relieved.

A response to a letter of inquiry stated that the patient has a urinary stream of adequate size, which flows freely. There is not any burning or pain on urination, and he voids about four to five times during the day and about twice at night.

Case 7.—A white man, aged forty-six years, about two years ago, had had urinary frequency and urgency, marked nocturia, and some incontinence of urine. These symptoms gradually had responded somewhat to persistent prostatic massage. The last few months he had complained of few symptoms, except a slow stream. His physician had found 6 ounces of residual urine at different times.

Examination at the clinic revealed 200 c.c. of residual urine, and a prostatitis, grade 4. The voided urine contained leukocytes, grade 3. Rectal examination revealed prostatic hypertrophy, grade 1.

Cystoscopic examination disclosed chronic granular prostatic urethritis, grade 2, a small median bar or an odd type of sclerosis of the posterior half of the vesical neck, and a cystitis, grade 2+. The vesical urine which was obtained by catheterization revealed leukocytes, grade 2, and culture disclosed *Escherichia coli* and *Streptococcus fecalis*. Neither ureter was catheterized, but both were spurting clear urine.

Conservative treatment was advised; accordingly, prostatic massage, vesical lavage, and the ketogenic diet were tried for sixteen days, but 125 to 150 c.c. of residual urine persisted.

Because of the residual urine, a transurethral resection was performed and the sclerotic bar was removed. Bites were taken from the portion of vesical neck, which corresponds to that which is situated between three and nine o'clock on the dial of a clock. The tissue which was removed weighed 1.5 gm. Pathologic examination revealed an adenofibromatous hyperplasia. The period of hospitalization was five days.

When the patient left the clinic, the amount of

residual urine was between 40 and 50 c.c., but was gradually diminishing. The patient had an adequate stream. There was not any urinary frequency, but he had to void two to three times each night.

A response to a letter of inquiry (patient was operated on two months ago) states that the amount of residual urine is only 30 c.c., and seems to be diminishing gradually. There is not any urinary frequency or urgency, and there is not any burning on urination. His stream is adequate and he has to void only twice each night.

Case 8.—A white man, aged sixty-three years, had had a small stream, which was difficult to start and was interrupted. This had been present for five years. There had been dribbling at the end of micturition and the patient had felt that he did not empty his bladder. He also complained of frequency, and nocturia, which caused him to void three to four times each night. During the past four weeks the symptoms had increased greatly in severity.

Examination did not reveal any residual urine. There was a prostatitis, grade 4, and rectal examination revealed prostatic hypertrophy, grade 2. The voided urine revealed only an occasional leukocyte.

Cystoscopic examination disclosed chronic cicatricial prostatic urethritis, grade 2, prostatic fullness, grade 1, and a median bar, grade 1. The bladder was normal. The vesical urine, which was obtained by catheterization, was apparently normal, but the culture revealed *Streptococcus fecalis*. Neither ureter was catheterized.

Conservative treatment was carried out for twenty-five days. This consisted of prostatic massage, vesical lavage, and the intravenous administration of neoarsphenamine. There was not any improvement as a result of this treatment.

Transurethral resection was carried out at the end of this period, but the patient was informed beforehand that the results would be doubtful. Tissue which weighed 1.5 gm. was removed from the posterior vesical lip. Pathologic examination revealed adenofibromatous hypertrophy. The period of hospitalization was six days.

When the patient left the clinic, there was not any residual urine, and the symptoms were partially improved.

A response to a letter of inquiry stated that his stream is not good. It is still interrupted and there is some terminal dribbling. There is only a very little burning or discomfort on voiding and he voids seven to eight times during the day and two to three times at night.

Comment

The crux of the problem, therefore, is that when in doubt about the management of the

prostatic patient, conservative treatment should be tried first, and, if it does not give results, surgical intervention is indicated. It is not fair to the patient, however, to continue with ineffectual medical treatment for a long period of time. Surely, three to six weeks is sufficient trial. At the clinic, we recently operated on a man who was in his late forties. He had been incapacitated for a year because of severe prostatic symptoms that consisted of marked urinary frequency and urgency, nocturia, burning on urination, a slow urinary stream, and residual urine. Prostatic massage, which had been employed for one year, had not given any results. The latter six months of this period, he became so incapacitated that it was necessary for him to give up his position. Cystoscopic examination revealed a hypertrophy of the median lobe, grade 2+. Following transurethral resection, he was relieved completely and left the hospital on the fourth day. This case is cited to illustrate the unfairness to the patient of too long a period of conservative treatment, when it is proving ineffectual. On the other hand, it is just as much an error in judgment to submit a patient to resection of a small amount of tissue at the bladder neck if his symptoms are caused primarily by the inflammatory element, as is the case in the patient suffering from chronic cicatricial prostatic urethritis. In addition to not relieving the symptoms in such a case, they may occasionally be exaggerated and the infection of the vesical neck may become more difficult to treat than it was before.

We feel, therefore, that it is of primary importance to adhere to the rule laid down before, namely, "when in doubt, give conservative treatment a trial first." If the physician will follow this simple rule, surely he will be able to exercise good sound judgment and to care for prostatic patients in a modern, up-to-date manner.

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THE SPECIAL OPERATIVE TECHNIC IN CERTAIN TYPES OF PROSTATIC DISEASE*

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THE recent progress made in the treatment of prostatic disease has brought relief to a class of individuals who would otherwise continue to endure a life of misery or prematurely succumb to the complications of prostatic obstruction. The improved methods in handling these cases have been brought about mainly by recognizing all the problems present in each individual case and treating or relieving these associated complications as well as the primary disease itself.

No doubt the simple method employed today to relieve obstruction by the resectoscope has done much to prevent the serious consequences of an obstructing bar or lobe left untreated. Preliminary treatment, however, has contributed much in coping with this disease and has encouraged patients to seek relief earlier, thereby preventing many complications that would otherwise ultimately manifest themselves.

The mortality rate in the transurethral resection operation, as given by the urologists, is extremely low; but, when one considers the greater number of patients who are now seeking and accepting treatment by this method and many of them in a much earlier stage of the disease than formerly, the mortality rate should, in consequence, be very low. However, if some of these patients would have the enucleation operation performed, the results would be more gratifying as they would be rid of the whole of their local trouble and, perhaps, would not have to have a second or third resection.

Our added knowledge gained from past experiences and the recognized necessity of employing preliminary treatment of all disabling complications before any operative treatment is undertaken, has brought about better results.

Kretschmer⁶ reports 40 per cent of cardiac disease in 300 unselected prostatic cases and states many of these can have a suprapubic enucleation in one stage, safely, and others after preliminary cystostomy. It has been shown that, when proper drainage is established, many dependent afflic-

tions, such as hypertension, gastrointestinal and heart trouble, improve, thereby permitting an operative cure of the prostatic disease.

As to the cause of enlarged prostate, C. H. Mayo⁷ advances the theory that it might be the penalty of civilization; retaining too long a large amount of urine in the bladder, or the inability under our present social status to empty the bladder when urgency arises. The theory of endocrine imbalance is unlikely.

The types of this enlargement are varied. The intravesical form sometimes is very large. It may completely surround and greatly lengthen this portion of the urethra. The subvesical type, situated below the internal sphincter, may cause atrophy of the normal prostatic tissue and, when very large, seemingly displace that organ.

The surface of the growth may be smooth or irregular and frequently, within the mass, nodules of varying sizes are found with connective tissue septa. When carcinoma is present, small, firm masses and an apparent thickened urethral wall are observed. Cystic areas may contain fluid and, occasionally, pus. The acute enlargement with obstruction may be due to an over-distended bladder, with swelling, inflammation and infection calling for instrumentation. This should, in the beginning, be recognized as a non-operative case and treated as such.

Deming² and his co-workers state that hypertrophy of the prostate has been the subject of endless dispute as to whether it is a hyperplastic process or a true neoplasm.

F. Reischaur⁸ states: "The relationship to myomata of the uterus becomes more evident if the proliferation of the stroma is considered the cause of prostatic hypertrophy." If such is the case, it would be as unreasonable to remove a part of such a growth, in a prostate, as it would be to remove part of a uterine myoma.

Gronn and Mikkelsen⁴ state: "The possibility of a carcinoma developing in an adenoma must be borne in mind in every case of prostatic hypertrophy and the prognosis for a clinically undemonstrable carcinoma in an adenoma is relatively good on enucleation."

*Read at the annual meeting of the Southern Minnesota Medical Society, at Austin, Minnesota, August 26, 1935.

Geraghty³ has said that: "In 75 per cent of carcinoma, an adenoma preceded this development or hypertrophy was associated with it." The second type of carcinoma originates in the adenoma and cannot be diagnosed until a careful histological examination is made of the removed growth.

The frequency with which carcinoma has been found in the prostate varies from 20 per cent according to Young, 13 per cent according to Judd, and 10 per cent according to Guckerendall.

The methods of examining the prostate and the condition of the whole urinary tract have so improved in recent years, that there is little excuse for overlooking complications. The surgeon is now able to learn the size, shape and consistency of the obstruction or growth, and the condition of the bladder and ureters. Rectal examination, however, still remains one of the most important methods of determining the size and consistency and location of the tumor. Often, cancer can be suspected from this examination alone.

By intravenous urography and other uses of the x-ray, the cystoscope, chemical analysis of the urine and blood, and by thorough physical examination, one should determine the function of the kidneys, the amount of residual urine, the presence of albumin, casts, pus, or blood or any other abnormal constituent of the urine.

A urethritis, cystitis, pyelitis, or pyonephrosis, as well as diverticula or stones, should be recognized. An abscess, cancer or tuberculosis also can usually be discovered.

Herbert Williams¹⁰ would do a suprapubic operation on cases with marked enlargement and prominent bulging into the rectum. Gilbert Thomas⁹ believes that, in selected cases, prostatectomy and transurethral resection are about on a par when done by competent surgeons.

In carcinoma of the bladder, Hymen⁶ prefers open operation and resects the proliferating part with the endotherm needle, coagulates the base and plants radium seeds in the remaining diseased area.

Alcock¹ believes that the family physician will note the final comparative results of resections and prostatectomies and will be the deciding factor in determining which method will be employed in each individual case.

The majority of prostatic cases will, possibly,

be treated by the general practitioner and operated by the general surgeon; and inasmuch as few general surgeons can successfully use the resectoscope, we must find a way so that it will be possible for them to get results that will compare favorably with those of the urologist.

If the surgeon will: (1) carefully examine and select his cases; (2) follow a thorough preliminary and postoperative form of treatment; (3) become familiar with the modern methods of treating these cases; and (4) is well trained and equipped to rapidly and skillfully operate, his results will be satisfactory. The serious cases and those definitely requiring the removal of a bar or small obstructing lobe by the resectoscope should be referred, if possible, to one equipped and experienced in this line of work. The method of attack for relief will depend upon the judgment, experience, ability and qualifications of the surgeon and the condition of the patient, when operation is decided upon.

In the presence of infection when the indwelling catheter is not tolerated, a two-stage operation may be indicated. A preliminary cystostomy should be performed, after which marked improvement may occur. These patients should be out of bed shortly after this procedure, however, and the prostate removed when the patient is in a satisfactory condition.

It would seem advisable to use the suprapubic method of attacking growths of the prostate in the presence of:

1. Large intravesical tumors of the prostate.
2. Other large tumors situated below the bladder.
3. Irregular tumors which may contain cancerous nodules.
4. Difficulty in the passage of the resectoscope.
5. An abscess or the possibility of an abscess.

The objects to be accomplished by the operation are:

1. To prevent oncoming obstruction.
2. To overcome obstruction.
3. To restore the function of the bladder.
4. To relieve back pressure on the kidneys and prevent hydronephrosis.
5. To establish free drainage and prevent or overcome infection.

Most suitable prostatic cases can have a suprapubic operation performed under local anes-

thetia. Personally, I prefer spinal or caudal anesthesia with novocain.

The patient is previously given a large amount of water and, if desirable, intravenous glucose or calcium chloride. A moderate sized catheter is placed in the bladder. The bladder is flushed out and, having been previously tested for capacity, is filled with the amount of boric acid solution necessary for that purpose. After the usual suprapubic skin incision, the bladder is then opened with a trochar and suction used. After enlarging the opening, retractors bring the prostate into view. These may be armed with electric bulbs or separate intravesical lights may be used for clear vision. An assistant, with two fingers in the rectum, steadies and raises the prostate. A curved incision at the tip of the prostatic growth opens the mucous membrane of the bladder and a mucous flap is dissected from the growth. The tumor is dissected out rapidly with the fingers. The counter-pressure of the assistant's fingers on the prostate facilitates the dissection and makes it possible to identify any remaining nodules. If the growth is badly adherent and can not be removed easily, it may be scooped out with the electro-surgical wire loop.

The wound is kept free from blood by suction. Tags are thoroughly removed. Bleeding vessels are ligated. Additional bleeding points may be coagulated with the electric current or any interureteral obstructing bar can be removed by the electro-cautery knife without bleeding. The prostatic flap is stitched down to obliterate the prostate space.

The catheter tip is transfixated with a needle and a suture of silk, which is brought out through the suprapubic drainage wound along the tube, which is about one-third of an inch in diameter.

The proper location of the catheter is maintained by the suture affixed along the suprapubic drainage tube. This method of retaining the catheter is most satisfactory to the patient. The bladder is thoroughly and carefully closed around the suprapubic drainage tube, which is placed high in the fundus of the bladder. A purse-string suture of catgut is placed around the tube in the fundus of the bladder; this can be twisted when the tube is removed, thereby helping to close the bladder opening and lessening the period of convalescence.

In case carcinoma is suspected in the prostatic

area, the masses can be removed by the electro-surgical loop and the base cauterized or radium seeds can be placed therein.

The bladder is washed through catheter and drainage tube alternately to thoroughly remove blood and clots from the bladder, and frequent irrigations carried out thereafter until bleeding ceases.

The patient is usually given intravenous glucose for two or three days following the operation, large quantities of water, and a bland simple diet. The suprapubic tube is removed as soon as feasible. Occasionally this tube can be omitted where bleeding is not likely and the bladder sewed up tight, but frequent irrigations must then be carried out to prevent any clots from blocking the catheter. If, at any time, drainage from the catheter or suprapubic drainage tube ceases, they are immediately opened up by an irrigating stream.

A rectal tube is used, occasionally, to prevent gas pressure. In the usual case, the patient is propped up in bed directly following the operation and out of bed in most cases in three to seven days, if the bleeding has stopped. I am convinced that patients have been kept in bed much longer than necessary after these operations, which, no doubt, has been detrimental and increased the postoperative complications and the mortality rate. They should be encouraged to sit up as soon as possible.

Advantages of the suprapubic method, in certain cases, are:

1. Large tumors are thoroughly and quickly removed.
2. Second surgical interference is usually avoided.
3. Adherent portions may be quickly removed by the electro-cautery under direct vision.
4. Unsuspected carcinomata may be removed thoroughly by this method.
5. Patients are less likely to have infection.

Conclusion

In selected cases, suprapubic removal of the enlarged troublesome prostates should be the method of treatment.

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DISEASES OF THE PITUITARY BODY—LOVE

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DISEASES OF THE PITUITARY BODY AMENABLE TO SURGERY*

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IN 1885 Pierre Marie, while working at the Salpêtrière in Paris, reported two cases that he had observed in the great Charcot's Clinic. The outstanding and characteristic findings in these two cases, which suggested the name "acromegaly" for the new disease, were enlarged hands and feet and a deformed head with an abnormally prominent lower jaw. Thus the name "acromegaly," coming from two Greek words meaning "extremity" and "large," was applied to the entity. Marie did not know the cause of this transformation. He merely described the condition as an unusual, noncongenital hypertrophy of the head and upper and lower extremities. The next year (1886) Marie¹ described changes in the pituitary body in cases of acromegaly. The following year (1887) Minkowski described in more detail the relationship of disorders of the pituitary to acromegaly. Since then a voluminous literature has accumulated on the diseases of the pituitary. In 1894 Oliver and Schäfer were the first to demonstrate a function of the pituitary body when they noted a rise of blood pressure and a fall of pulse following injection of extracts made from the entire pituitary.

Fröhlich, in 1901, described a case of tumor of the hypophysis cerebri without acromegaly. In fact, there was arrested development, particularly of the organs of generation. This case represented deficient function of the pituitary, or a state of hypopituitarism, as contrasted with the hyperpituitarism of acromegaly.

Many notable contributions on the subject of disorders of the pituitary have been made, and for those particularly interested in the subject I would suggest perusal of works by Cushing

(1912) and by Bell (1919), and reading of The Harvey Lectures of 1933 by Cushing.

In February, 1893, seven years after the relationship of acromegaly to tumor of the pituitary had been suggested, a surgeon was bold enough to operate for relief of the intractable headache in a case of acromegaly. Paul, in Liverpool, undertook the operation but he never reached the pituitary tumor. He merely performed subtemporal decompression but in so doing relieved the headaches and the patient survived for three months. Later Horsley, who had suggested the temporal approach to the pituitary because of his experience with operations on animals, utilized this experience in attacking diseases of the pituitary in the human subject. Krause probably was the first to employ successfully the transcranial approach to the pituitary and in many respects his operative removal of a sarcoma of the pituitary compares favorably with the technic employed today in removal of pituitary tumors.

The treatment of diseases of the pituitary cannot, with justification, be divided into management of those cases which are to be treated medically and those which are to be handled surgically. In many cases it is a combination of treatments or methods that offers the patient the maximal amount of relief from his disease. For instance, a combination of radiotherapy, surgery and organotherapy may be needed for the proper handling of a particular case. But since I am supposed to limit myself to surgery I shall not discuss the applicability of roentgen and glandular therapy for pituitary lesions.

Tumors of the pituitary body proper and the expanding intracranial lesions which by their secondary pressure-effects on the pituitary cause pituitary dysfunction, are amenable to surgery.

Tumors of the pituitary, next to gliomas, are

*From the Section on Neurologic Surgery, The Mayo Clinic, Rochester, Minnesota. Read before the annual meeting of the Southern Minnesota Medical Association, Austin, Minnesota, August 25 and 26, 1935.

the most frequently encountered intracranial neoplasms and constitute about 20 per cent of all intracranial tumors.⁵ Their presence is easily detected and their surgical removal gives excellent results.

Although there are many different kinds of pituitary tumors, about 90 per cent⁶ of them are adenomas, chromophobe, eosinophilic and basophilic in type. About 20 per cent¹⁶ of the adenomas are cystic. The less frequently encountered pituitary tumors are the Rathke pouch tumors, or, according to Frazier, Rathke cleft tumors, and the hypophyseal duct tumors. Glioma and sarcoma of the pituitary are also known to occur. Rathke cleft tumors and the duct tumors are congenital neoplasms arising from embryologic rests and usually develop in childhood. They usually are cystic and practically always are situated above the sella turcica, although they may lie within the sella.

Diagnosis of Pituitary Tumors

The diagnosis of pituitary tumors depends on detection of two or more of the following findings: (1) endocrine imbalance (hyperpituitarism or hypopituitarism), (2) visual disturbance, and (3) roentgenographic evidence of abnormality either within or above the sella turcica.

True acromegaly is pathognomonic of a pituitary adenoma. In addition to the enlarged extremities, prominent lower jaw, and the sexual disturbance, there is practically always roentgenographic evidence of enlargement of the sella turcica. Later, also, visual disturbances may be noted but these are not as common as in the presence of other tumors of the pituitary body. The reason for this is that the eosinophilic adenoma of acromegaly tends to enlarge the sella downward and thus to decompress itself in the sphenoid air sinus.

Visual disturbance, with inability or decreased ability to see to either side, that is, in the temporal field of vision, is the hallmark of interference with the visual pathways in the region of the optic chiasm. The lesion which most frequently produces this bitemporal hemianopsia is the pituitary tumor. The demonstration of bitemporal blindness, in association with an enlarged and eroded sella turcica, is sufficient evidence to warrant a provisional diagnosis of pituitary tumor, and surgical exploration usually will confirm this diagnosis.

Roentgenograms of the skull, showing the sella turcica, are most helpful in the diagnosis of pituitary lesions. Intracellular adenomas cause expansion of the sella, with erosion of the floor and clinoid processes. The congenital tumors of the pituitary usually are recognized by the presence of flakes of calcium, shadows of which are easily demonstrated on the roentgenograms. These deposits of calcium usually appear above the sella turcica and may or may not be associated with enlargement and erosion of the sella. At times the entire extent of the tumor may be visualized on the roentgenographic film because, in the wall of the tumor, calcification takes place and appears as a more or less continuous shadow (see Case 2). Of course, when the tumor is situated above the sella, the chiasm or optic tracts are encroached on and a field defect results. Then, too, in the presence of congenital suprasellar cysts, frequently there is evidence of pituitary dysfunction such as failure of growth, lack of development of sexual characteristics, and abnormalities of the skin.

If the presence of a tumor is not determined, and adequate treatment is not provided, the lesion will continue to grow, will overflow the sella turcica, and then evidence of increased intracranial pressure will appear, together with "neighborhood" symptoms. The findings then would be those of any suprasellar intracranial tumor. If the tumor grows upward to involve the third ventricle, internal hydrocephalus develops, with consequent severe headaches, nausea and vomiting. The optic disks become edematous and secondary optic atrophy will supervene unless the pressure is relieved. There may be also torpor, disturbance of regulation of temperature, and diabetes insipidus from involvement of the hypothalamus. If the lesion extends laterally, ocular palsy may occur from pressure on the third, fourth, and sixth cranial nerves, which are nearby. Severe facial pain may occur from involvement of the gasserian ganglion.² This pain may be mistaken for trigeminal neuralgia. A complete examination, however, will clear up the diagnosis. If the lesion extends more laterally, into the middle cranial fossa, visual and auditory hallucinations or uncinat fits may result from irritation of the temporal lobe. If the lesion extends back-

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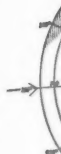


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ward into the interpeduncular space, bilateral involvement of the pyramidal tract will occur, as exemplified by the presence of bilateral Babinski reflexes.

practical application, I have reviewed some of the cases that have been under our care at the clinic and shall present a résumé of the records of three or four of these cases.

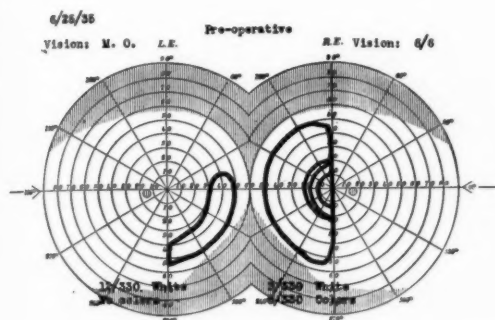


Fig. 1. Case 1. Chart of visual fields made before removal of pituitary tumor. M. O. means moving objects.

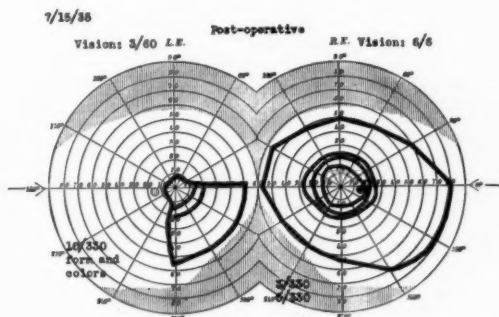


Fig. 3. Case 1. Chart of visual fields made sixteen days following operative removal of pituitary tumor.



Fig. 2. Case 1. Lateral roentgenogram of the skull, giving evidence of enlarged and eroded sella turcica.

Indications for Operation

In the case of pituitary tumors, operation is indicated (1) to preserve vision and (2) to relieve headache. When the tumor has extended beyond the limits of the region of the sella turcica and has given rise to symptoms and signs of increased intracranial pressure, surgical operation is necessary, although undertaken at great risk to preserve life.

Report of Cases

In order to emphasize some of the points made so far, and to give the discussion a more

Case 1.—Chromophobe adenoma of pituitary. Successful removal.—A white man, of thirty-six years, came to the clinic in June of this year with a complaint of blurring vision of six months' duration. He stated that when his vision had been blurred for three weeks he had consulted his local eye doctor, who had discovered bitemporal hemianopsia. Roentgenograms of the head had disclosed an enlarged sella turcica. Roentgen therapy to the pituitary region had been given without improvement in vision. His vision was failing gradually. At the time we first saw him, he complained of being practically blind in the left eye. In addition to the visual disturbance, he complained of loss of libido and potentia. Otherwise he considered himself in good condition.

On examination his blood pressure, pulse and temperature were normal. General physical examination revealed no abnormalities. His basal metabolic rate was -23 . Examination of the eyes revealed visual acuity of 6/6 on the right and ability to detect moving objects on the left (Fig. 1). There was pallor of the left optic disk. Plotting of the perimetric fields revealed bitemporal hemianopsia. Roentgenograms of the skull gave evidence of erosion of the floor and clinoid processes of the sella turcica (Fig. 2). A diagnosis of pituitary tumor was made, left transfrontal craniotomy was performed, and a large chromophobe adenoma of the pituitary was removed. Convalescence was uneventful. Examination of perimetric fields, sixteen days following operation, revealed marked improvement in vision. Visual acuity was 6/6 on the right and 3/60 on the left (Fig. 3).

Case 2.—Suprasellar cyst; Rathke pouch (or cleft) cyst. Successful removal.—In April of this year, a girl of five years was referred to the clinic for treatment for a brain tumor, because at home roentgenograms of the head had disclosed a large, suprasellar, calcified lesion. The referring physician had been

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consulted because of a squinting right eye and very poor vision. Except for mention of slight clumsiness and inability to hop on one foot, no other complaints were made. There had been no headache, vomiting or convulsions.

four days later, at which time neurologic examination gave negative results, the right strabismus had improved considerably, and she stated that she could see much better (Fig. 5). Objectively the vision was now 6/12 on the left, with temporal hemianopsia, and



Fig. 4. Case 2 (left). Lateral roentgenogram of the skull giving evidence of calcification in the wall of a suprasellar cyst, also enlargement and erosion of the sella turcica and convolutional atrophy of the skull.

Fig. 5. Case 2 (right). Appearance of patient sixteen days following removal of suprasellar cyst. The right transfrontal wound is well healed.

The girl was well developed, bright, and cooperative. Her blood pressure, pulse and temperature were within the limits of normal. Examination of the eyes revealed ability to perceive only light with the right eye. With the left eye the girl was able to count fingers in the nasal field of vision only. Pupils and reflexes were normal. There was a convergent strabismus on the right. Examination of the ocular fundi disclosed primary optic atrophy, which was more marked on the right. Neurologic examination gave normal results except for the visual findings and an inability to hop on one foot.

Roentgenograms of the head disclosed a very large (5 cm.) calcified tumor just above and anterior to the sella turcica. There was secondary enlargement and erosion of the sella turcica. In addition, there was convolutional atrophy of the skull, indicative of internal hydrocephalus (Fig. 4).

A diagnosis of suprasellar cyst was made and after the great risk of operation had been explained to the mother, right transfrontal craniotomy was performed and a very large suprasellar cystic tumor was uncovered when the right frontal lobe was elevated. To secure adequate exposure, the right lateral ventricle was tapped and the ventricular fluid removed, thus allowing the brain to collapse partially. Four ounces (120 c.c.) of rather dark fluid were aspirated from the tumor and then the collapsed cyst-wall, containing a large amount of calcium, was removed. Postoperative convalescence was uneventful and the patient was dismissed from the hospital fourteen days following operation. She was released from our care

the girl was able to detect moving objects with the right eye.

Case 3.—Hypophyseal duct tumor. Successful removal.—In July of this year, a male patient of twenty-six years (it is difficult to know what to call this patient for he was neither man nor boy) came to the clinic with a history of blindness of the left eye of two years' duration. The failure of vision had been gradual and had gone on to completeness on the left, and for the past six weeks he had noticed that he bumped into objects on his right, thus indicating that the right eye was failing. For one and a half or two years, in addition to the visual difficulties, he had experienced transient episodes of smelling something that was nonexistent. These experiences (uncinate fits) were followed by a sense of unreality and confusion.

The past history in this patient's case was interesting. At the age of six or seven years he had had severe headaches which had necessitated his leaving school. His gait on these occasions had been unsteady. There had been no headaches since the age of seven years. He had weighed twelve pounds at birth and had developed normally until the age of twelve years. There had been no growth between the ages of twelve and twenty-one years. During the past five years he had grown four inches (10 cm.) in height. Studying was an effort for him and his grades in school had always been poor. His voice never had changed.

Examination revealed a blood pressure of 84 mm. of mercury systolic and 62 diastolic, which was lower than the average normal. His pulse and temperature were

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normal. The patient's voice was high pitched, his appearance more feminine than masculine. His trunk was short, his arms and legs long, and his fingers long and tapering. The skin was white, fine, smooth and hairless. The hips were broad, the shoulders nar-



Fig. 6. Case 3 (left). General appearance of patient before operation.

Fig. 7. Case 3 (right). Appearance of patient ten days after removal of pituitary tumor. The left transfrontal wound is well healed. Pigmentation of the skin of the face is common in hypopituitarism.

row, and fat pads were present over the symphysis pubis and the greater trochanters. The genitalia were rudimentary (those of a ten or twelve year old boy) and the prostate gland was undeveloped (Fig. 6).

Examination of the eyes disclosed complete blindness of the left. Vision of the right eye was 6/5, with complete temporal hemianopsia. Examination of the fundi revealed bilateral, primary, optic atrophy; the change was greater on the left than on the right.

Neurologic examination disclosed marked diminution of all tendon reflexes and a positive Babinski sign on the right. Roentgenograms of the skull disclosed that the sella turcica was greatly enlarged, with destruction of its floor and erosion of the posterior clinoid processes and dorsum sellae.

A diagnosis of a large tumor, extending within and above the sella turcica, was made and left transfrontal craniotomy was performed for its removal. When the left frontal lobe was elevated, a large, cystic tumor of the pituitary gland was encountered. The tumor filled the sella turcica and extended anterior to, and above, the optic chiasm, which was displaced posteriorly. When the capsule of the tumor was incised, a large quantity of dark brown, grumous material, with crystals of cholesterol, escaped with a gush. The tumor

had undergone complete cystic degeneration. When all of the content had been evacuated, the cyst-wall was gently dissected from the optic nerves and chiasm and removed. Convalescence was uneventful and the patient was dismissed from the hospital on the tenth day following operation; he was released from our care two days later, at which time neurologic examination gave results that were unchanged. There was no demonstrable change in the visual field, but the patient stated that he could see better and there was questionable perception of light on the left, where complete amaurosis had been present prior to removal of the tumor (Fig. 7).

Case 4.—Suprasellar and intrasellar cyst with negative roentgenograms. Successful removal.—A girl first came to the clinic when she was eleven years of age. At that time we obtained a history of influenza at the age of five years. Following this illness she had failed to gain in weight, and she never had been strong and active. At the age of eight years she had had measles, after which she had suffered from excessive thirst and excessive urination. She would drink two to three quarts of water in the course of the night, and would pass large quantities of urine; she would have to get up two or three times a night.

Examination of the eyes gave normal results. Roentgenograms gave evidence of a normal skull, with a small sella turcica. Pituitrin in a dose of 3 minims, given hypodermically, daily was sufficient to control the diabetes insipidus. (Urinalysis was negative for sugar.)

At the age of nineteen years this patient returned to the clinic because of the recent development of severe headaches associated with nausea and vomiting. Although her diabetes insipidus had been controlled with pituitrin she had failed to develop and she had menstruated only twice. One month prior to admission she had noticed for the first time that when she covered her left eye she could see only light from her right.

Physical examination revealed a markedly underdeveloped girl. She was small of stature and her sexual organs were infantile. Her basal metabolic rate was -12 .

Examination of the eyes disclosed bitemporal hemianopsia with primary optic atrophy on the right. Neurologic examination gave normal results, except for the ocular findings. Roentgenograms of the skull were negative. Roentgenograms of the hands gave evidence of normal centers of ossification.

A diagnosis of pituitary tumor was made and Dr. Adson performed a right transfrontal craniotomy, with removal of a cystic tumor of the pituitary body. The tumor was situated for the most part above the sella turcica, but it extended into the sella as well. Convalescence was uneventful.

This patient returned two years later because of convulsive seizures of a grand mal type. She had gained some in stature and weight. There had been no progression in visual changes subjectively, and this was confirmed by determination of perimetric fields.

Neurologic examination gave normal results. This latest development, convulsions, is merely another manifestation of the glandular imbalance, dyspituitarism, and is not attributable to any postoperative change or to any localized cerebral lesion.

Conclusion

During this short discussion I hope I have been able to bring out some of the more important facts regarding tumors of the pituitary body. Although the normal pituitary is an extremely small organ, it may assume rather large proportions, and in so doing may completely alter the appearance, development, and life of the individual. For a long time this organ was considered inaccessible, and, even though a diagnosis of pituitary tumor could be made, surgeons were loath to attempt surgical extirpation. A recital of the foregoing cases should, I think, convince one of the beneficial effects which can be derived from surgical operation on this organ. With earlier recognition of lesions of the pituitary the results of surgical operation will improve, for if these patients can be operated on early, when the hemianopsia is incomplete, full restoration of vision can occur. When these patients are seen late in the disease we have to satisfy ourselves with preservation of the remaining vision.

With the present studies of endocrinology we may hope for a better day, when many diseases

of the pituitary may be prevented or even cured by administration of some extract made either from this or from some one of the other glands of internal secretion. Until that time arrives, early diagnosis and early surgical treatment offer the patient who harbors a pituitary tumor the best chance for preservation of vision and avoidance of irreversible changes in the body and irremediable damage to the brain.

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OBSTETRICS IN GENERAL PRACTICE*

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MY part in this symposium is based on experience in general practice and will deal especially with certain features in the management of the difficult cases which we all have every year. I shall not attempt to discuss all the unusual presentations of which we may have only one or two in a lifetime.

We do not always obtain as much help as we would like from the textbooks on obstetrics, for these books are written by men carrying on an obstetrical practice in large and specially equipped hospitals, and, under the conditions met in general practice, the help and the facilities are

usually lacking to carry out in detail the procedures recommended. We are thrown upon our own resources and must do the best we can under the circumstances.

Every year we all have a number of cases where the baby has been born before we arrive, or is born shortly after we get there. These are usually the source of no trouble, for, while there has been no aseptic technic, there also have been no examinations and no meddlesome interference. About all that is left to do is to deliver the placenta and search for any tears that need to be repaired. While it is somewhat like putting the cart before the horse to discuss the delivery of the placenta at this point, it is in just this type

*Read before the meeting of the Southern Minnesota Medical Association, Austin, Minnesota, August 26, 1935.

of case that we occasionally have trouble. If the placenta does not come away easily in twenty or thirty minutes we try to express it by the Crédé method and this is usually successful. Occasionally, however, the placenta is adherent and we are likely to find ourselves attempting to loosen it in the cervix with the gloved hand in these patients who have not been properly cleansed and prepared beforehand. One may find it necessary to go higher and higher in the uterus to get the placenta entirely free and I think we should make it a rule to wait a few hours if necessary for the placenta to come away by external manipulation and if we must invade the uterus at all for manual delivery to first have the patient as thoroughly cleansed as possible, and then, under an anesthetic, be prepared to go as high as need be to complete the delivery. It is not a simple procedure and is fraught with danger of sepsis.

We come next to the average or moderately severe cases, usually primiparæ, in which the pains are fairly severe but dilatation is slow. The occiput is probably anterior or we may suspect an occiput posterior which is slowly rotating to the front.

The young husband, who a few hours before was blithely expectant that the baby would be here after the third pain, is now pacing the floor and saying, "Doctor, for God's sake can't you do something?" The grandmother is telling us for the fifteenth time what old Doc Snatchem did under exactly similar circumstances when her boy Johnnie was born. The doctor is distinctly on the spot. What to do under the circumstances? We are likely to be goaded into starting something against our better judgment. Under these circumstances I can recall no case where I have been sorry for waiting but I can recall several times when I have been sorry for starting something too soon. I think the thing to do is to give the patient what relief we can with three to six grains of sodium amytal, followed, especially if she becomes somewhat unmanageable, by 1/6 or 1/4 grain of morphine, which seems to overcome the occasional exciting effect of the sodium amytal. We are told that the doctor's place at this time is by the patient's side, but if she is in a hospital or if someone with some experience is available to watch her I think the patient's best interests are often served by the doctor disappearing for a while so he will not be worn out by waiting and where he will not be tempted to

start interference too soon. Dilatation of the cervix is the sine qua non for anything the doctor may do and I can recall no case in several hundred where it did not finally occur. Thyutrin is advised in these cases and I have sometimes used it with apparent good results in hurrying dilatation but in this case everything must be ready for an anesthetic for it often excites intense contractions, as hard or harder than we see with pituitary extract. I do not believe it should be used often outside of a hospital.

After dilatation is complete and the head makes some progress downward there is often an apparent arrest of progress though the pains are hard and the patient is becoming somewhat exhausted. The baby's heart tones are good or there may be some indication of fetal distress. We must use our judgment as to when to interfere and if the case is in the average home it is usually best to leave the patient alone. If she is in a hospital I think we should not be as reluctant as we often are to help her with the forceps. Granting that the head is in the occiput anterior position, with the patient under deep anesthesia we should take plenty of time to iron out the perineum. We do not always do this as thoroughly as we might and I think it is very important. Then with low or median forceps and episiotomy if necessary, and it is usually necessary in a primipara, I think we may often save the patient a lot of agony with little or no added danger to the mother or child. After all, the doctor is engaged to render some help in the case and when the time comes that he can safely do so I feel that he should not be too alarmed by the danger of low forceps.

But supposing we know it to be, or find it to be, a persistent occiput-posterior. Anyone who has tried to deliver an occiput-posterior by forceps knows how difficult or impossible it is, and this position is generally given as a contraindication to the use of forceps, though it is occasionally done. If there were no occiput-posteriors the lives of general practitioners doing obstetrics would be much easier. What is the best way to deliver an occiput posterior? I have seen many articles written on the subject but after reading them I have usually felt like Omar Khayyam in the Rubaiyat:

"Myself when young did eagerly frequent
Doctor and saint, and heard great argument
About it and about: but evermore
Came out by the same door as in I went."

In other words I have still been uncertain about the matter because so often the technic described has been something difficult to carry out in general practice. The only thing I ever learned about the Scanzoni maneuver was not to do it on account of the danger of injury to mother and child. There are various types of special forceps for rotating the head with which I am not familiar but which are probably efficient in the hands of men skilled in their use. For some time I thought version was the best procedure and I still think it is a good one if the case has not progressed too far and the waters have not broken so that one may make a small hole in the bag of waters and enter the hand quickly so that the version can be done while there is plenty of water in which to turn the baby. But unfortunately the waters have often been broken for hours when we get to the stage of active interference and version may then be a formidable procedure. It can nearly always be done though, even if the waters have been broken for hours, if the patient is thoroughly asleep under ether and if the doctor carefully works down a leg so that he can really get hold of an ankle to pull on while someone else renders some assistance suprapubically in pushing upward gently on the head. I know of no place in the practice of medicine where it is more necessary for the doctor to keep his head and not get excited and hurried. I think now that in persistent occiput-posterior positions, manual rotation of the head with application of the forceps in the anterior position is the answer when it can be done. The difficulty is usually not in turning the head but in holding it there while the forceps are applied, for when the turning hand is removed the torsion of the neck causes the head to return to its former position. I have found it to be a great help to have someone push steadily downward over the suprapubic region with one hand sunk deeply along each side of the baby's head before the operator removes his hand and while he is applying the forceps. This helps greatly in keeping the head from rotating to its former position. If it is not possible to rotate the head sufficiently it may be necessary to reach somewhat higher and attempt to rotate the shoulders also. If this is successful, there will usually be no trouble about then rotating and fixing the head. There is some danger of prolapse of the cord in such a case but I think this

will not often occur. If it does and cannot be replaced, or if there is failure in the attempt to rotate the head, there seems to be nothing left to do but version.

In regard to version, or in breech delivery, the baby is most often lost due to difficulty in delivering the after-coming head, and the trouble is not so much in delivery of the head itself as it is in delivery of the shoulders and arms, which may become extended above the head. If the arms and shoulders are delivered quickly enough there need not be so much hurry about the head for the body of the baby can be extended upward and the mouth wiped out so breathing can occur. Formerly I often had difficulty with the arms and shoulders, but since carefully studying Potter's book on version and following his method the difficulties have been greatly lessened. In Potter's method, as the body is born it is turned so as to bring one shoulder directly under the symphysis pubis and this shoulder is delivered first by depressing the body of the baby sharply over the end of the table so that the upper shoulder shells out under the symphysis first and usually the arm comes down without any trouble. The baby is then rotated 180 degrees, so as to bring the other shoulder to the top and down under the symphysis in the same way. The body is then lifted upward, pressure being made suprapubically if necessary, and the mouth made available for breathing by depressing the perineum, in which case there need be no great haste in delivering the head.

In regard to cesarean section, I can only say that it would seem to be not often necessary. In a series of about 700 cases I have seen only one where I felt it was definitely indicated and in which it was done. In this series, including the average small number of late toxemias of pregnancy, there was one maternal death and this was not the type of case where there was any indication for cesarean section. Some babies may have been lost that would have been saved by section but I believe the maternal mortality would have been greater had it been done very often. I have recently known of a case of cesarean section in which the baby died three or four days later of what was called cerebral hemorrhage, and if this is so, it would seem that section will not necessarily prevent that.

There are many other phases of obstetrics in general practice but in summarizing those phases

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presented in this paper, I would stress the following:

1. Patience to wait for dilatation of the cervix, giving the patient in the meantime what relief is possible from analgesics such as sodium amytal and morphine in moderate amounts. After dilatation most cases will deliver normally.
2. Courage to assist the patient who needs it when the suitable time comes with whatever anesthesia is available and by low forceps, manual

rotation of the head and forceps, or version when these procedures seem indicated and when progress has been made to a point where they can be safely done. I am referring here to the long drawn out difficult cases.

3. The avoidance of efforts to deliver the placenta manually until one is thoroughly prepared to go as far as need be, which may be to the very top of the fundus of the uterus.

CASE REPORTS

PERINEAL PROSTATOTOMY FOR STONE: REPORT OF FOUR CASES*

WALTMAN WALTERS, M.D.

and

NORMAN W. THIESSEN, M.D.

Rochester, Minnesota

PROSTATIC calculi are usually the result of infection, and symptoms accompanying their presence are mainly attributable to predisposing infection unless the stone or stones have produced urinary obstruction. In most cases, the best treatment is by transurethral methods. Thompson and Cook reported sixty-seven cases of chronic prostatic abscess, in seven of which there were complicating stones; 90 per cent of the patients were satisfied with results obtained by transurethral methods of treatment. Prostatotomy or prostatectomy, however, will have to be done under certain conditions: when a stone has so far obstructed the urethra that passage of a cystoscope is impossible, when the stone is too large to be removed by the transurethral route, or when the symptoms cannot be ameliorated by prostatic massage and other medical measures. Any accompanying hypertrophy of the prostate gland can be treated by transurethral resection. If the stone is attributable to infection, its removal makes adequate treatment of the infection more possible.

Judd and Crenshaw have reported twelve cases of prostatic calculus in which operation was by various methods and results were good. We recently reported a case of prostatic calculus in which the importance of surgical interference was stressed.

The following four cases are presented to illustrate the operative indications and the importance of controlling the predisposing and accompanying prostatic and

urinary infection. In all of the cases the operative procedure was perineal prostatotomy.

Report of Cases

Case 1.—The patient, a white man sixty-four years of age, registered at the clinic in 1926, complaining of having been troubled with nocturia, dysuria, and frequency for the previous year. When a young man, he had had a gonococcal infection; a urethral stricture had followed and had been treated surgically. Following this he had had no symptoms except mild nocturia which had increased until, at the onset of the trouble for which he came under our care, he had been obliged to urinate three or four times each night. He had noted that the urinary stream would suddenly stop, only to start again after a short time. He had felt well generally, except for mild, intermittent gastric distress.

Physical examination revealed only a nodular, boggy, and tender prostate gland, which was moderately enlarged on rectal examination. The urine contained albumin grade 3, pus grade 2, and erythrocytes grade 1. The flocculation test for syphilis was negative. Estimations of the various constituents of the blood yielded normal values. In roentgenograms of the region of the bladder were multiple shadows, apparently from material in the prostate gland. By cystoscopic examination multiple prostatic stones were demonstrated, but there was no residual urine.

Prostatic massage resulted in so much improvement that the patient refused further treatment. He was dismissed and advised to have the infected teeth and tonsils removed.

He returned in February, 1935, because of increasing perineal pain accompanied by hematuria. For several years he had also had gaseous indigestion, and one attack of upper abdominal pain had been followed by a questionable degree of jaundice. Physical examination on this admission again gave essentially negative results, except that multiple calcified masses could be felt in the prostate. The urine, grossly inspected, was full of pus. A flat roentgenogram of the abdomen outlined the prostatic stones, and also multiple gallstones. Passage of a cystoscope was impossible because of the stones, which were fixed in position.

Through a perineal incision the prostate gland was exposed. Several large stones were removed (Fig. 1). Stone forceps were introduced into the bladder, but no stones were formed there. A split tube drain was inserted into the cavity left by the removal of the stones

*From the Division of Surgery, The Mayo Clinic, Rochester, Minnesota.

CASE REPORTS

and a retention catheter was inserted through the urethra.

Convalescence was uneventful. The drain was removed in forty-eight hours, and the retention catheter on the tenth day. The man was dismissed from the hospital on the seventeenth postoperative day, in good

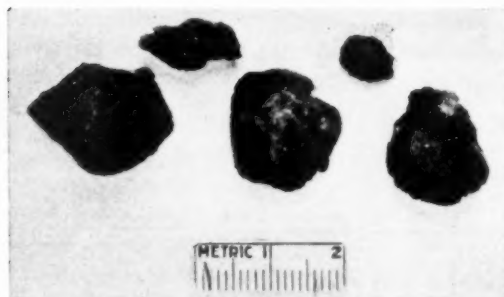


Fig. 1. (Case 1).—Prostatic stones removed by perineal prostatotomy.

condition. Cystoscopic examination revealed a small vesical stone which was crushed and removed. There was 90 c.c. of residual urine, which disappeared under treatment with vesical lavage and administration of ammonium nitrate. The man was dismissed from the clinic on the twenty-fourth postoperative day with his incision healed and with very minor symptoms.

He returned to the clinic for reexamination six months later. The flow of urine was excellent, although moderate pyuria was present.

Case 2.—The patient was a white man, fifty-two years of age. He first came to the clinic in 1927 complaining of having had bladder trouble for the previous four or five years. Eight years before his admission he had passed a kidney stone and then had been well until the onset of his present illness. He had had mild dysuria, pain over the suprapubic region, and intermittent hematuria.

General physical examination gave negative results, as did laboratory investigation, except that pus, grade 2, was found in the urine. On cystoscopic examination an edematous right ureteral orifice, and a large stone impacted in the intramural portion of the right ureter, were found. Operation was advised for removal of this stone, but at exploration the condition of the kidney was such that nephrectomy was done. The pathologist reported that the kidney was almost completely destroyed and that its pelvis contained several small stones. Convalescence was uneventful, and the patient was dismissed from the hospital on the fifteenth postoperative day.

The patient returned in six months, with the same complaints as on his previous admission, but, as before, nothing objective was found on physical examination. Laboratory examination again gave negative results, except that there was pus in the urine. On cystoscopic examination, numerous dilated prostatic ducts, with pus oozing from them, were seen. By palpating the prostate gland, with the cystoscope in place, stones could be felt in the left lobe. It seemed improbable that the prostatic infection could be cured in the presence of prostatic calculi. Therefore, through a perineal incision the prostate was exposed and numerous small calculi were palpated in both right and left lobes. Portions of each lobe of the prostate, containing the stones, were removed and the prostatic capsule was resutured. Convalescence was uneventful, and the patient was dismissed from the hospital on the fourteenth postoperative day.

The patient returned again in 1931, stating that if he did not perform lavage of his bladder two or three times a day, tenderness appeared in the suprapubic region and he suffered from general malaise. Nothing could be demonstrated on physical examination. On cystoscopic examination a contracted bladder, containing some 50 c.c. of residual urine, was demonstrated. Several small prostatic stones were also palpated. Because of the prostatic hypertrophy, a punch operation was carried out with good results. The patient recovered from the operation, and following his dismissal from the hospital was treated by irrigations of the bladder. Then he began to run intermittent fever and seemed to lose ground steadily. One month after his punch operation, nephrostomy was performed for left hydronephrosis, apparently attributable to a ureteral stricture at the vesical orifice. The subsequent course was stormy, but the patient finally recovered.

Intravenous urograms, made three months later, gave evidence of a greatly hypertrophied kidney, but without much evidence of hydronephrosis. Function apparently was normal. This was of extreme interest because of the previous trauma to the lower end of the ureter incision to intravesical manipulations and the previous nephrostomy.

The patient was dismissed from the clinic in fair condition, and, while his condition has improved somewhat, he has reported by letter that he is still troubled by various symptoms which are no doubt attributable to his urinary infection.

Case 3.—The patient was a white man, forty-nine years of age, who came to the clinic first in 1926, complaining of frequency of urination during the previous ten years. In that time he had had occasional periods of dysuria but no hematuria. Some vesical irrigations by his physician at home had given him no relief.

Physical examination gave essentially negative results. Urinalysis revealed pus, grade 1, and albumin, grade 1. Culture of the urine revealed *Proteus ammonia*. The concentration of blood urea was 38 mg. per 100 c.c. Cystoscopy disclosed extensive subacute cystitis, a vesical diverticulum measuring 4 by 5 cm., which emptied itself, chronic prostatitis, and dilated prostatic ducts from which pus was oozing.

In the ensuing two months he was treated by various methods with little relief. Massage of the prostate caused chills and fever, and phosphatic encrustations reappeared in the bladder as fast as they were removed. Because of the presence of prostatic obstruction by a small median bar, a punch operation was finally performed. The patient made an uneventful convalescence and was dismissed feeling fairly well.

He returned five months later complaining of increasing frequency. The urine, on gross inspection, appeared to be mixed with pus and blood. Culture of the urine again disclosed *Proteus ammonia*. Cystoscopic examination gave no evidence of improvement in the cystitis and, in addition, it disclosed bilateral pyelonephritis. The patient's condition improved very little under several kinds of treatment.

The patient returned in 1928 with the same complaint and was again subjected to intensive treatment. Nearsphenamine, given intravenously, somewhat decreased the frequency and burning. The function of the kidneys was normal, however, and it was decided to continue medical treatment.

The patient again returned in 1931, stating that he had been fairly well until three months previously when a severe pain had developed over his left kidney, accompanied by fever. These attacks had appeared with increasing frequency until his admission. Examination revealed marked prostatitis and multiple prostatic stones. The bladder still gave evidence of extensive infection, but intravenous urograms indicated that both kidneys were normal in size and function. Because the chronic prostatitis was probably serving as

CASE REPORTS

Summary

Four cases of prostatic stone, in which perineal prostatotomy has been performed, are reported. The surgical treatment for prostatic calculus is indicated, first, when the stone is large enough to obstruct the flow of urine; second, when by its size and position it prevents removal by transurethral methods; and, third, when removal of the calculus will allow more adequate treatment of the prostatic and urinary infection. It is obvious, from study of these cases, that surgical operation is only a stage in the treatment and that postoperative care is essential to produce amelioration of symptoms, or cure.

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EFFECT OF AN EXCESSIVE BEE-STINGING*

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SO FAR as I know, the American medical literature does not contain any account of the effect of being stung by a great number of bees. During the last summer I was simultaneously stung by 150 bees. There were 105 stings on the upper surface of the left arm, between the wrist and the elbow, and forty-five on the same surface of the other arm. I will describe the symptoms in the sequence in which they appeared.

In several minutes after I was stung, my heart started pounding vigorously and my scalp began to itch terribly. Next the area around my lips became numb, and there was a tingling sensation as though ants were running over them. The same feeling was in my feet, with the difference that "the ants" were running up toward my knees. Then I became slightly dizzy. Meanwhile the grass, the leaves of the trees, and the sky turned white. I could not feel my pulse at all. Usually fainting is preceded by a sensation of darkness, but in this case the dizziness progressed until finally I saw only a white indefinite mass before my eyes. Then I fainted. The unconsciousness lasted for only about half a minute, according to the testimony of persons who saw me collapse. I still was dizzy but I had an urge for defecation, after which I almost fainted. I lay on the ground for about ten minutes more. The leaves, grass, and sky gradually resumed their normal colors. All the symptoms lasted from

*Paper No. 330 of the Miscellaneous Journal Series of the Minnesota Agricultural Experiment Station.

a focus of the cystitis, prostatotomy was done through a perineal incision. Three large stones, measuring approximately 2 cm. in diameter, and several smaller ones, were removed. The urethra was reconstructed over a catheter.

The patient recovered from his operation, but paralytic ileus and signs of renal failure developed. Extravasation of urine occurred anterior to the triangular ligament; suprapubic cystostomy and drainage of the scrotum were carried out, following which the patient improved greatly. However, he then progressively failed, the concentration of blood urea and of creatinine rose, and the patient died in uremia.

Case 4.—The patient first came to the clinic in August, 1929, complaining of a suprapubic sinus of eight weeks' duration. For five years he had had numerous attacks of pain simulating left renal colic. He had passed gravel and small stones. Between his attacks, he had had occasional hematuria and some dysuria. In June, 1929, after roentgenologic examination elsewhere, he had undergone suprapubic cystostomy, but a stone had not been found. The cystostomy tube had been removed after thirty-six hours, and the sinus had never healed. He had continued to have pain resembling left renal colic.

Physical examination on admission gave essentially negative results, except that the small, suprapubic, draining sinus was seen, and on rectal examination a firm nodule could be felt in the prostate gland. Laboratory investigation gave essentially negative results, except for the finding of pus, grade 3, in the urinary sediment. In roentgenograms of the pelvis was the shadow of a large stone, apparently in the prostate.

Because of the urinary obstruction, a perineal incision was made and a single calculus, approximately 2.5 cm. in diameter, was removed from the left lobe of the prostate. The levator ani muscles were brought together and the cavity left by removal of the stone was drained by a small split tube. Convalescence was uneventful and the patient was dismissed from the hospital on the seventh postoperative day.

Two weeks after operation the urethra was dilated under general anesthesia, and a cystoscope was introduced into the bladder. A small stone was removed from the left ureteral meatus, and 30 c.c. of infected residual urine was demonstrated in the left renal pelvis. The patient was treated for his urinary infection and dismissed.

He returned in November, 1929, with a persistent perineal sinus. Injection of this sinus with an opaque dye allowed roentgenologic demonstration of a small pocket in the region of the prostatic urethra, and apparently communicating with it. The sinus was dilated to the caliber of 24 French and thorough lavage with acriflavin was performed. The patient then left the clinic to be treated by his physician in his home community.

He returned in August, 1930, and said that in January, 1930, his home physician had performed prostatectomy. His complaints at that admission were of dysuria, frequency, and nocturia. His general condition was good. General examination and investigations gave negative results except for the finding of a dense stricture of the posterior urethra. This was dilated, on three occasions, to the caliber of 26 French and the patient was advised to undergo repeated dilations.

The patient reported by letter, three years after operation, that he had continued to have renal symptoms, with the passage of stones, and that an operation had been performed for removal of stones from his left kidney. He had also been troubled by frequency and dysuria, which were apparently results of his renal infection.

CASE REPORTS

about fifteen to twenty minutes. The swelling of the arms completely disappeared in two days.

I had been immune to bee stings and those which I got in the apiary under normal circumstances had not bothered me at all. Apparently, a simultaneous injection of 150 stings was in excess of the power of my organism to take care of without this strong reaction, but my sensitivity for bee stings was not increased.

MULTIPLE NONOPAQUE FOREIGN BODIES IN THE ESOPHAGUS*

PORTER P. VINSON, M.D.

Rochester, Minnesota

MANY cases of multiple foreign bodies in the esophagus have been described, especially in infants and in persons suffering from mental disturbances. These foreign bodies have usually been opaque to roentgen rays and have consequently been easily identified. When

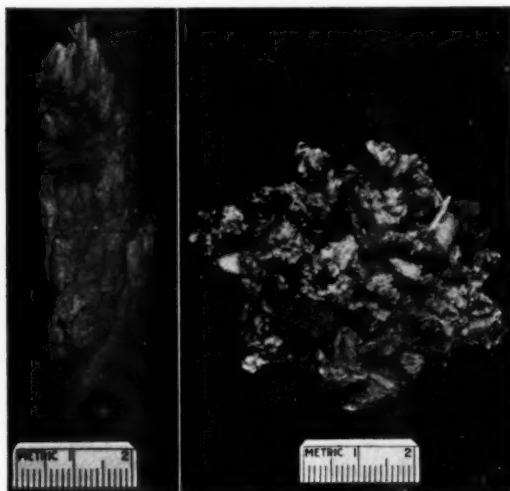


Fig. 1 (left). Portion of meat found in upper part of esophagus at first esophagosopic examination.

Fig. 2 (right). Bolus of chewed meat found in lower esophagus.

such foreign bodies are nonopaque, however, the problem of diagnosis becomes more difficult, as is illustrated by the following case:

*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota.

A man, fifty-eight years of age, was admitted to the hospital for treatment for essential hypertension and morphinism. He had lost all his teeth and wore dental plates; in other respects the findings had no bearing on the patient's esophageal difficulty.

A week after the patient's admission to the hospital

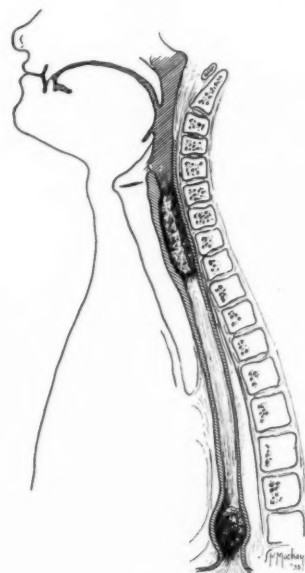


Fig. 3. Showing the relative positions of the two foreign bodies in the esophagus.

he said that a piece of meat had stuck in his esophagus and that he was having much discomfort. At first it was thought that he made this complaint because of a desire to obtain an increase in the dose of morphine, which was being gradually restricted. Later, an esophagosopic examination was made and a large piece of meat which had not been chewed was found in the upper portion of the esophagus (Fig. 1). It was too large to remove through the esophagoscope, so the tube had to be withdrawn from the esophagus when the foreign body was extracted. After removal of this foreign body, the patient stated that he was much more comfortable, but he was still unable to swallow either solid food or liquids.

Fluoroscopic examination on the following day revealed an obstruction in the lower portion of the esophagus after a small amount of barium mixture had been ingested. A second esophagosopic examination was then made, and another large bolus of meat which had been partly chewed was removed from the lower portion of the esophagus (Figs. 2 and 3). The esophageal mucous membrane was normal in appearance and there was no evidence of stricture.

There were no further symptoms referable to the esophagus during the remainder of the time the patient was under observation.

EDITORIAL

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Volume 19 MARCH, 1936 Number 3

Pituitary Solution in Herpes Zoster

THE patient who has herpes zoster almost invariably calls on the physician for relief of the pain which accompanies this disorder. The pain varies in degree and duration, but tends to be less severe in young individuals. In patients past forty-five years of age, the pain is likely to be very severe, and occasionally lasts for one or more years. Therefore, any therapy which will relieve the pain of herpes zoster should be included in the armamentarium of all physicians. A review of the literature revealed five articles in which the writers reported dramatic relief of the pain of acute herpes zoster, by injections of solution of pituitary. Failure was reported in two cases; in both of these cases solution of pituitary was administered for the relief of post-herpetic neuralgia.

The first report of the administration of solution of pituitary in cases of herpes zoster, which was made by Vendel, appeared in the Scandina-

vian literature in 1923. This writer said that nine patients were relieved within a few hours, and cured within a few days, by subcutaneous injections of pituitary extract. Nine other patients were treated in the usual manner, with the usual results.

In 1930, Sidlick, of Philadelphia, reported relief of pain of herpes zoster with injections of solution of pituitary. This was the first report in the American literature. In 1932, Niles, of New York, reported a series of sixteen cases of herpes zoster in which the patients were treated with pituitrin; the results in these cases compared favorably with the results in a control group of cases in which the patients were treated with other methods. The only failure was in two cases in which post-herpetic neuralgia had been present for eleven months and seven weeks, respectively.

Gillett, in 1934, was the first to report the use of this preparation in cases of herpes zoster in England. He presented brief histories of three cases in which administration of pituitrin produced dramatic relief of pain. He concluded as follows: "I have found that the injection of pituitrin is an uncertain, and by no means an infallible, treatment. It appears to act most dramatically when the pain is most intense." Ravn, in 1935, reported one case in which the result was dramatic. He also said that Prusik treated two patients successfully with pituitrin.

The technic of administration varied little in all reports. Niles found surgical and obstetrical pituitrin equally effective when administered intramuscularly in doses of 1 c.c. The relief occurred in from one minute to several hours. Usually, one, two, or three injections, on successive or alternate days, were sufficient.

The only contraindication to the use of solution of pituitary appears to be pregnancy. To hypertensive and senile patients Niles administered only 0.5 c.c. as an initial dose. The only untoward result reported was a momentary sensation of faintness. Cramping pain in the abdomen may occur after its administration.

Four physicians, in personal communications, have estimated that they have administered solu-

tion of pituitary from five to thirty times in cases of herpes zoster. Only one could recall any case in which it was effective.

In conclusion, the reports concerning the relief of pain in herpes zoster by injections of solution of pituitary are few, but highly favorable. They record the relief of pain of acute herpes zoster but do not report the relief of postherpetic neuralgia. In fact, two failures in the presence of the latter condition are presented. It is suggested that this therapy be tried widely. If it is not found to be as effective as the reports indicate, an unbiased report of a long series of cases is in order.

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Child Adoption and Doctors

IT happens not infrequently that the practitioner and more often the obstetrician is called upon to officiate at the delivery of an illegitimate child. With the best of intentions he may occasionally attempt on his own responsibility to assist the mother in disposing of the child and providing a child for adoption by some desirous couple. In this way he would seek to avoid publicity and to him unnecessary legal proceedings.

That this is not the best way of handling a delicate situation was brought out clearly in an address* by the Honorable Edward F. Waite before the Hennepin County Medical Society. In assuming the responsibility for meeting this situation the physician may be doing the child an injustice.

A child is assumed to have certain rights. He is entitled to care and education and the state is by law responsible in event a child is found to lack the protection of "reasonably competent par-

ents." Certain provision has therefore been provided in civilized countries to protect children.

Baby farms and orphan asylums were common in Minnesota until 1917 when the state laws were revised and County Child Welfare Boards established to represent locally the State Board of Control. It is the function of these County Boards to investigate by means of trained workers cases of illegitimate birth or proposed adoption and to obtain all possible information as to paternity, property rights, character of foster parents, et cetera, before adoption is sanctioned. Every effort is made to provide for permanency in adoption and a trial period of six months is now provided before legal adoption is culminated.

The County Board, having an element of permanency, is in a position to follow adopted children to assure that they are being well provided for, whereas an individual's assumed responsibility naturally ceases when he is instrumental in providing a new home.

It is not difficult for a reasonable person to understand that the present mechanism provided by the State for supervising adoption of illegitimate children is much better in the long run than for individuals to assume this responsibility, although in individual cases the latter solution may prove satisfactory to all concerned.

Home adoption has largely replaced the orphan asylum in Minnesota and it is the consensus of opinion among social workers that this is a step in advance. Incidentally, it is interesting to learn elsewhere that the demand for babies for adoption is much in excess of the supply, such is the realization that children are a necessary supplement to a home.

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*Waite, Edward F.: Child Adoption in Minnesota. *Bull. Hennepin Co. Med. Soc.*, 7:19, (Feb. 25) 1936.

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Cyclopropane for Anesthesia (Ohio Chemical and Manufacturing Co.)

The Ohio Chemical & Manufacturing Co. presented Cyclopropane for Anesthesia for the consideration of the Council on Pharmacy and Chemistry for the purpose of issuing a preliminary report. Cyclopropane was first noted as trimethylene by von Freund in 1882. It is an inflammable gas, less explosive than ethylene or nitrous oxide-ether mixtures. No explosions have been reported and the closed circuit technic of administration helps to avoid them. More than 5,000 clinical administrations have been reported in patients of all ages and in practically all surgical conditions. In obstetrics the agent seems to have been more useful than in other fields. It is recommended for all types of individuals, and in grave circulatory risks and extremely ill patients, largely on the basis of the high oxygen concentration possible with this anesthetic. The induction is rapid and pleasant, and there is no choking or burning. It is a powerful agent of low toxicity in adequate concentrations and is nonirritating. The usual pre-operative procedures have been used with this agent, and also the barbiturates and spinal agents. Less premedication is said to be required and even preferred with this agent. In ordinary concentrations there is said to be very little effect on the blood pressure. The effect on the heart is slight, as indicated by the clinical notes and electrocardiographic studies. In the 4,400 cases referred to by Waters and Schmidt in their most recent study, cyclopropane suffered by comparison on the basis of cardiac complications (in spite of the advantages of high oxygen concentration). These investigators report a mortality of 4.16 per cent as compared with 3.99 per cent with other agents. This figure is not at marked variance, but the attempt is ever to prevent just such small increases. The Clinical Congress of Anesthetists which met Oct. 15, 1934, in Boston, placed this agent on a carefully controlled program of distribution and use for one year. The Council has deferred further consideration of Cyclopropane for Anesthesia (Ohio Chemical and Manufacturing Company) until more evidence of its usefulness is available. (J. A. M. A., January 25, 1936, p. 292.)

MARCH, 1936

OBITUARY

"... he went down.
As when a lordly cedar, green with boughs,
Goes down with a great shout upon the hills
And leaves a lonesome place against the sky."

John B. Dunn

1860-1936

DR. JOHN B. DUNN, St. Cloud, died at the age of seventy-six on February 6, 1936.

A graduate of Rush Medical College in 1882, Dr. Dunn was one of the pioneers in central Minnesota, coming to the state in the early nineties. He retired from practice some twelve years ago.

His wife and three daughters survive him.

William Sommerville Fullerton

1857-1936

DR. WILLIAM S. FULLERTON was born at Round Hill, Nova Scotia, September 18, 1857. He was educated in grade and high school at Annapolis Royal, Nova Scotia. His higher education was begun in Dalhousie College, Halifax, and completed with his graduation from Bellevue Medical College, New York City, in 1881.

He began practice of medicine at Bear River, Nova Scotia, where he was married in 1882 to Miss Ida L. Moore. They reared five children.

He moved his family to Minnesota in 1884, settling first in St. Paul, but very soon took the position of physician for the Duluth-Iron Range Railway during its construction. It was during this service that on several occasions he was forced to use dog sleds in calling on some isolated patients, in northern Minnesota. In 1900 he returned to St. Paul, where he practiced medicine and surgery until about 1925, when he retired from active practice. He was for a period a member of the State Board of Medical Examiners, and served for several years as chief of the x-ray service at the Ancker Hospital.

Dr. Fullerton was made a Master Mason in Keith Lodge No. 16, Bear River, Nova Scotia, on January 1, 1883, a little more than fifty-three years ago, and he affiliated with Ionic Lodge No. 186, Duluth, soon after moving there. In 1908 he affiliated with Ancient Landmark Lodge, Saint Paul, in which he served a term as Worshipful Master.

After some years of failing health, Dr. Fullerton passed away February 7, 1936, in Saint Paul.

OBITUARY

David Edward Seashore

1875-1935

WE pause in the busy course of our professional lives to dwell—as in the lines of Wordworth—“on that best portion of a good man's life, his little nameless, unremembered acts of kindness and of love.”

David Edward Seashore was born February 4, 1875, on a farm near Dayton, Iowa. His father, a Swedish Lutheran preacher, was Earl Gustaf Seashore and his mother was Ameli Emily Seashore. Doctor Seashore attended Gustavus Adolphus College for three years and then taught school at Marine Mills and also at West Union, Minnesota. He then went to Iowa University two years and later to the University of Minnesota, where he acquired his degree of Doctor of Medicine in 1902.

Doctor Seashore started his professional career at Battle Lake, Minnesota, where he practiced three years. He came then to Duluth in 1905 where he carried on an active practice until the time of his death, November 4, 1935. He was a member of the St. Louis County Medical Society, Minnesota State Medical Association, American Medical Association, American College of Surgeons, Interurban Academy of Medicine, and the Staffs of St. Mary's and St. Luke's Hospitals.

He was a member of the Duluth Board of Education at one time early in his career and in other respects showed himself civic-minded and coöperative. He was a great admirer of the work of the late Dr. J. J. Eklund and for a number of years he worked in close association with Doctor Eklund.

Doctor Seashore was a member of the Episcopal Church and of the local Masonic bodies, including the Shrine. He knew how to play, to take a reasonable amount of recreation, and to this end he was for many years an active member of the Ridgeview Golf Club and of Northland Country Club. He also went to Florida several winters for short seasons of golf and recreation.

This beloved fellow practitioner, whose passing we regretfully acknowledge, was a tolerant and helpful friend and one of the most popular men in our profession. He was always devoted to his patients and he had one of the largest followings in Duluth. He was thoughtful and studious in keeping up to date, but he followed largely the words of Pope:

“Be not the first by whom the new are tried,
Nor yet the last to lay the old aside.”

Doctor Seashore was aware of his cardiac instability for several years. He became more deliberate in the manner of his moving. He practiced economy of effort and had recently given up strenuous exercise in order to attend his patients as long as he could.

It is with grief that we announce his passing. He leaves a wife and two children and to them we extend our deep sympathy in their bereavement.

ARTHUR N. COLLINS, M.D.

ROBERT S. FORBES, M.D., *Chairman.*

Frederick W. Van Valkenburg

1898-1936

DR. Frederick W. Van Valkenburg, physician and surgeon of Long Prairie, Minnesota, was killed instantly and his wife injured slightly when, on February 8, 1936, a truck collided with the car in which they were returning from Minneapolis to their home. The accident occurred on the State Highway just south of Anoka.

Dr. Van Valkenburg was born in Long Prairie on February 21, 1898, the son of Dr. B. F. and Bessie Van Valkenburg. He received his early education in the city of his nativity and soon after his graduation from high school he entered the University of Minnesota to study medicine. His medical education was interrupted by his enlistment in the 812th Aero Squadron, with which he went overseas. At the conclusion of the war he returned to his professional studies and received his doctorate in medicine from the Medical School of the University of Minnesota in 1925. His clerkship was spent at the Charles T. Miller Hospital in Saint Paul, and both his junior and senior internships at the Ancker Hospital of Saint Paul.

After graduation he became associated with his father in the practice of medicine and surgery at Long Prairie. During 1927 he went to the Cook County Hospital in Chicago for post-graduate studies in surgery. There, on June 21, he was married to Miss Constance Payte, of Saint Paul. In 1933 he began a fellowship in surgery in Philadelphia under the University of Pennsylvania Medical School. Returning to practice in Long Prairie, in 1934 he accepted the post of Resident Urological Surgeon at the Newark City Hospital in New Jersey. He had been in practice only eight months following this training when the fatal accident occurred.

Dr. Van Valkenburg was a member of the Todd County Medical Society, the Upper Mississippi Medical Society, the Minnesota State and the American Medical Associations. While he was in Long Prairie he was a member of the Todd County Medical Advisory and Contact Committee and he served as secretary of the Upper Mississippi Medical Society in 1933. He was a member of the Phi Rho Sigma medical fraternity and of the Masonic Lodge and American Legion.

He is survived by his wife and daughter Sally, his father and stepmother, Dr. and Mrs. B. F. Van Valkenburg, and a brother, Dr. L. K. Van Valkenburg, a dentist, of Long Prairie. His wife and daughter will make their future home in Saint Paul.

In the death of Dr. Van Valkenburg the medical profession loses one of its most loyal and respected members. He was an ardent student and devoted most of his time and effort to professional advancement. His medical knowledge and surgical ability were sources of inspiration to all of his medical associates and his friendship was cherished by all who knew him well. Besides his loss to the profession, Long Prairie mourns his death as one of its major catastrophes.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association

B. J. Branton, M. D.
L. H. Rutledge, M. D.

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A. N. Collins, M. D.

What Can I Do for My County and State Medical Society

Following are some important suggestions made under this heading during the last four months:

1. To assist high school debaters.
2. To study the problem of care for the sick poor in each county and to establish good working relations with local officials responsible for such care.
3. To study the Social Security program as it affects medical care in Minnesota and to strengthen local county contacts with all health and welfare agencies that will be concerned in the new program.
4. To avoid thoughtless remarks on social medicine that may work injury to organized medicine and medical practice.

Have all of these important matters been discussed in your own society meetings?

Has your society complied with the suggestions which especially apply to conditions among your own members in your own county?

If not, can you be certain that you, personally, are doing your duty by your own society?

* * * *

Be sure to arrange for a complete report at your next society meeting from your delegate to the 1936 County Officers Meeting.

Thanks to Dr. Fishbein

When the medical profession of America takes account of its blessings—as it should now and then even in the midst of the alarms and excursions occasioned by the latter day itch for sweeping reforms—it must certainly thank its lucky stars for Dr. Morris Fishbein.

As a combination of popular educator, lecturer, writer, editor, he is without equal in any scientific field in America or the world today.

There are other writers—there are orators—there are scholars. But there is only one man who combines the prodigious knowledge, the forceful style, the ability to speak at any time

before any kind of audience, not only with accuracy and effectiveness but with the technic and entertainment value of the most famous artists of the stage.

Physicians all agree that one of the principal functions of medical organization today is public health education.

For Public Education

An intelligent, well-informed lay public is, without doubt, the best defense against the damaging socialization of medicine: It is the best answer to the modern problem of good medical care for all the people.

Medical associations are justified in spending large sums of money to contribute as effectively and rapidly as possible to the development of that kind of lay public in the United States.

Dr. Fishbein, because he is a personage known to every doctor and to millions of people all over the country as an entertaining personality, as well as an authoritative educator, commands columns of space in the daily newspapers and is paid for filling them.

State medical societies that prepare and send out their own press service do not compete with Dr. Fishbein. They send their material to the country weeklies that are unable to purchase the syndicate services that employ Dr. Fishbein.

Without Expense

But the American Medical Association, in effect, sends a press service to the metropolitan newspapers in nearly every city of any size in the country—and without the expenditure of a single cent of its money.

Dr. Fishbein prepares and syndicates his daily health column under his own name and on his own responsibility. We could wish that in every paper he was specifically identified with the American Medical Association. It is unfortunate that many papers prefer only his personal en-

dorsement. But, in the eyes of America, he stands for the American Medical Association anyway. And every single doctor, as well as the cause of popular health education, reaps the benefit.

At frequent intervals Dr. Fishbein visits Minnesota in person. Sometimes it is at the invitation of the state society. Sometimes it is the Minnesota Education Association or the Minnesota Public Health Association, the state Parent-Teacher organization or the colleges who ask for him.

Heard by Thousands

When he comes he is always genially available to us to speak three and sometimes four times above and beyond the principal address of the day, and always it is as a visiting celebrity and never as a propagandist for any organization.

A total of many thousands of persons often hear Dr. Fishbein in a single twenty-four hours here. Year after year they come in crowds and—what is equally significant—they spend their own money for the privilege.

What they get is not only authoritative information on health and on new developments in medicine but also the philosophy, ideals and aspirations of the practicing physician—and a good show besides.

If anything should happen to Morris Fishbein we know of no one in America who could take his place.

Help for the Negative

Victory seems to be going heavily to the affirmative in the high school debates.

There were twenty decisions for the affirmative against ten for the negative in the last report of the regional meets received from Mr. O. E. Smith, executive secretary of the Minnesota High School League.

The subject: "Resolved: That the several states should enact legislation providing for a system of complete medical services available to all citizens at public expense."

The question arises again: Are the doctors doing all they can to help the debaters?

The state office has sent out a great deal of material, including the Minnesota Handbook, to all parts of the state.

But personal contact and individual aid is worth more than printed pamphlets. It should

have been supplied by friendly local physicians to supplement all the debate material on the negative side of the issue.

Neglect of Duty

If it was not supplied in the towns where the battle has been lost, the local physicians may justly be charged with neglect of duty. An opportunity has been irrevocably lost.

Of course, the best of aid and assistance will not win a debate for stumbling debaters. But it hardly seems possible that there were twice as many clever talkers on the affirmative as on the negative side of the question.

There are still many regional debates to be staged before the April finals.

Physicians in the towns where the contests are yet to come off should act *now*.

New Deal for Relief

The problem of medical care for the indigent is now coming to a head in many quarters of the state.

All relief is being re-organized under the direction of the Executive Council and the SERA with the responsibility placed back with the county and township.

Where does that leave the physician, particularly in the rural county?

At the end of all the vicissitudes of Federal Relief as it affects medical care, the whole relief problem is back on the doorstep of the county court house and the town hall.

Pivotal Point

The physicians who have been energetic and far-seeing enough to establish good working relations with the officials within those structures are now, at this pivotal point in relief re-organization, in a good position to care for the sick poor in their communities efficiently and with some degree of satisfaction to themselves.

The others are struggling along under that outworn institution, the under-paid county physician, or with no official provision or agreement whatever. Result: an unbearable burden of charity work for the physicians and inadequate care for the poor.

This is a problem which no stranger, no privy council of higher-ups from outside, can handle.

It is a problem for the County Committee of

Three, representatives of the physicians who live and practice in the county or the township, to settle.

Physicians Must Act

If the situation is unsatisfactory, it is for the physicians to decide what best can be done about it and bring their suggestion to the proper authorities.

In so doing, the experience of other physicians elsewhere who have successfully negotiated with their local officials may well be heeded.

It is of no use, these others have found, to appear abruptly with a slightly wild, if idealistically sound, program before these hard-pressed and often hard-bitten personages.

Physicians should take the trouble to acquaint themselves, thoroughly, with the local situation, the problems of the commissioners, the practical possibilities for a change in the method of handling medical care in their communities. They should talk the matter over thoroughly, informally and confidentially with these same officials before they appear officially before the county or town meeting with their plans and woes.

Survey

That it can be done is shown by the fact that some thirty-five counties in Minnesota are known to be handling their medical care for the indigent on a fee basis and through all the practicing physicians of the community in a reasonably satisfactory manner. Sixteen others have established themselves on the fee basis, but, for reasons having largely to do with the general unsatisfactoriness of the Township System for relief, are not operating to the complete satisfaction of the physicians.

These figures are derived from a survey now being conducted by the State Office of the various methods of handling the indigent sick problem throughout the state.

The survey shows, to date, that at least twelve counties still employ a county physician or physicians.

Contract Experiments

The Survey has shown, in addition, that no less than seven counties are experimenting with the so-called "contract plan" whereby a lump sum is appropriated by the county authorities for medical relief which, in turn, is pro-rated

among all of the physicians of the community.

These plans have, in most cases, been put into effect very recently and no report of how they work can be made as yet. They show a tremendous advance over the old time county physician plan and a great improvement in the "physician-county commissioner" relationship.

Twelve counties had reported the presence of county physicians as this issue went to press. Others reported an unsatisfactory combination of the county physician and the "fee basis" plan, while a few others reported an absence of any official arrangement for care of the sick poor.

County Responsibility

The responsibility for the care of the indigent rests squarely with the local authorities—with the county commissioners in the case of the county plan and with township officials in the counties where the township plan still exists.

That responsibility was well established legally long before federal relief dislocated somewhat local delivery of relief. It remained even during the emergency, as an interpretation and opinion from Attorney-General Harry H. Peterson that was printed in these columns last year, re-affirmed.

It is now more obvious and more securely established than ever before, as the relief organization prepares to return to the individual counties and municipalities the administration of relief.

County Commissioners to Hear Physician

Aid and assistance to the physicians and their Committees of Three should result from the meeting of the State Association of County Commissioners scheduled for February 27 and 28 in Minneapolis.

For the first time in history, a physician will appear before this state convention of commissioners to explain the doctor's position and the desirability of organizing all local medical relief on the fee basis with free choice of physician.

The physician chosen for this task is Dr. O. E. Locken, of Crookston, whose experience as Mayor of Crookston and as president of the League of Minnesota Municipalities gives him an excellent working knowledge of local governmental affairs as well as of medical problems.

Dr. Locken's discussion should assist greatly in promoting understanding and good will among the county commissioners of the state.

SERA is Interested

Aid has been received from another important quarter, too. A recent bulletin from SERA headquarters in St. Paul to their county workers included the following paragraphs:

"A Way of Giving Medical Care"

"As a means of handling the problem of medical care, some counties are considering apportioning so much money for medical expenses of the entire year, making agreements with the physicians of the county whereby they will take care of all indigent medical cases for the stated fund. The apportionment of the allotted sum among the physicians would be handled entirely by them on the basis of the services rendered by each.

"There are many possibilities and ramifications to this suggestion, but we feel that it is worthy of much thought and consideration. We should like very much if county welfare boards and relief committees would discuss it fully at their next meeting, or as soon as possible, and incorporate the gist of that discussion in the county minutes so that we may know what the various counties think of the plan."

Counties Step Into the Lead

The relief bill passed by the legislature at its special session made available the sum of \$7,625,000 for the period ending July 1, 1937. Of this sum \$1,250,000 is tentatively set aside exclusively for disabled veterans' aid.

General responsibility for expenditure of this fund now rests with a state Executive Council.

This council in its turn has vested the SERA with full authority to "supervise, direct and control." But direct responsibility for the expenditure of funds in each county lies now with the county commissioners or the agency designated by that body.

SERA headquarters in St. Paul will have universal supervision and it must approve the local administration of relief. Its jurisdiction will include the social service aspects of relief and extend to accounting and the distribution of surplus commodities. On the other hand, the county relief unit developed by the SERA will now be withdrawn in theory and a local county organization will take its place. Actually, in most localities where SERA is still functioning, the county commissioners are quite likely to take over the

existing relief organization for their own purposes.

Medical Care for Pensioners

Thus local county or municipal government steps into the lead again in the management of local relief and also in administration of payment of Old Age Pension authorized by the last legislature.

Administration of old age assistance is subject, in its turn, to supervision of a state agency appointed by the Board of Control.

The law prohibits all other relief to old age pensioners with the explicit exception of medical, dental, surgical, hospital or nursing care.

Here, again, the county commissioners or a board appointed by the commissioners is in direct local control. It is the county that is responsible for supplying the medical care that is thus allowed in the law.

Physicians through their Committees of Three should make a special point of talking over this matter of medical care for old age pensioners with their county commissioners. They must see that the point is thoroughly understood and will be acted upon with fairness to pensioners and physicians by the county relief unit.

Our Problem to Solve

$$\text{Doctor} + \frac{\text{Patient and Second Doctor}}{\text{Lawyer and Expert Witness}} = \text{Malpractice Case}$$

Malpractice litigation in order to be brought to a successful issue for the complaining party must have certain elements:

1. *The disgruntled or mistaken patient.*—In Minnesota less than 2 per cent of the cases brought are justifiable from any standpoint.
2. *The tactless, envious or rejoicing second doctor on the case.*—In our state more than half of the cases are started in the hope of damaging the reputation of the first attending physician or exalting the work of the second man on the case.
3. *The lawyer for the plaintiff.*—We are fortunate in having less than 5 per cent of the practicing lawyers in Minnesota who will take a case against a doctor. Attorneys in the majority feel that the damaging of the reputation of a professional man of any calling will harm all of the learned professions.
4. *The expert witness for the plaintiff.*—A man who sells the birthright of a noble profession for a few pieces of silver. It may be good that each profession has these among their number: maybe they are the stimulus that holds us all to better work.

Remove any one from our equation and you have the answer. *No malpractice case.*

The more than 2,000 men in our society can by care and example eliminate one or more during 1936. The aim of the Medico-Legal Advisory Committee: *Fewer cases will then be accomplished.*

Hats and Sofas

Notes on regimentation:

Dr. Walton H. Hamilton of Yale University is a much quoted authority on economics and social science.

Dr. Hamilton tried very hard to help the other doctors of economics and social science and public health of the Committee on Costs of Medical Care find out what is wrong with medical care in America and what to do about it.

Last week, Professor Hamilton reasonably proposed, in a widely published Associated Press story, to standardize women's hats and clothes.

Women pay too much for their clothes, particularly their hats, said Professor Hamilton.

What they really pay for is style, the atmosphere of an exclusive small shop, a label in the lining.

Now, atmosphere and a label perform no useful service in covering women's heads as the professor pointed out. And covering the head is presumably the real object of a hat.

Thus atmosphere, individuality, labels should be thrown out. Women's hats should be standardized, said the professor.

In Alaska, too

In Alaska one day last fall a woman friend who was making a tour of the Matanuska Valley came upon a perplexed official completely surrounded by mail order catalogues.

The official was engaged in selecting furniture for colonists. He wanted to buy chairs and davenportes wholesale that would combine comfort, economy and durability.

He appealed to our friend for help, and our friend in her turn, being full of misgivings, suggested a committee of women colonists.

The committee was appointed forthwith and retired to the great Alaska outdoors to make its deliberations.

Inside, our friend and the official waited impatiently for his committee.

Eventually the official sent her to find his committee on furniture and report.

Our friend went. She found a group of disgruntled women who spoke with spirit and force and to the following effect.

"We'll Do Without"

"We don't want furniture that's just like everybody else's in this colony."

"If I have to have the same chair in the same corner as every other woman in Alaska I don't want any chair at all."

"You can tell him for me I'll just get along without any furniture if he's ordering."

Our friend reported faithfully and with speed and the women of Alaska chose their own furniture from the mail order catalogues.

Choosing Doctors

The women of the United States and Alaska will probably continue to demand the right to choose their own hats without too much regard for durability and economy, as well as their furniture.

They will also continue to pick their own doctors, probably, either by open rebellion or by sly devices no matter what standardization may eventually be forced upon them by the wily politicians who seize upon the so reasonable arguments of the theorists in social science.

At least we hope they will do so. If they do not, it will be a sign that we have degenerated sadly in a few short years from the sturdy independence of our American forebears who threw off the paternalism of a still feudal Europe to make their own freedom in a new world.

New Seal

The Council of the Minnesota State Medical Association has gone on record as officially opposed to the new Easter Seal sale proposed by the Minnesota Association for Crippled Children.

Their reason is not that they are opposed to the work of the association for crippled children. They are opposed to the use of the seal as a method of raising funds because it endangers the tuberculosis campaign in the state which has long been supported by the sale of Seals at Christmas time. The seal sale method of fund raising belongs by priority and by many years of intensive development to the National Tuberculosis Association and its affiliated societies.

To encroach upon the method is to weaken it for all concerned, in the opinion of the Council.

"Sex Doctor"

Medical men will be interested to know that Mr. M. Sayle Taylor, radio's Voice of Experience, who has been lending radio assistance to various welfare agencies, is a former patent medicine salesman and "doctor" of sex books and sex movie fame.

Not so long ago "Dr." Taylor was lecturing at Madison Street movies in Chicago with sex shows "For Men Only" and "For Women Only." Also he was issuing pamphlets with intriguing titles such as: "Facts for Wives—Plain Truths about Marriage"; "The Secret of Youth and Charm"; "How to Know Your Affinity"; "A Study of Glands," and "Sex Vigor."

His movies were billed thus: "Dr. M. Sayle Taylor's 'Married Love,' 'Solving the Problems of Lost Manhood' and 'Showing How to Retain Virility, Power and Pep.'"

All these and more interesting facts about "The Voice of Experience" were printed by the Bureau of Investigation of the American Medical Association in the *Journal*, March 12, 1932.

Memorial for Dr. Johnson

The first public announcement by the state society's Herman M. Johnson Memorial Committee is to be made at the County Officers' Meeting at the Lowry Hotel in St. Paul, February 29.

The committee will ask contributions from the entire membership of the society for this memorial. A letter to that effect will shortly go out to all physicians of the state.

The memorial contemplated will probably take the form of a lectureship to be devoted to medical economics.

It was owing to Dr. Johnson, individually, more than to any one man that the excellent laws protecting the practice of medicine and the public against quacks and cults were passed in Minnesota.

It is, therefore, especially appropriate to consider a lectureship which shall continue his work

as a living force in the instruction of the future doctors of Minnesota.

Regional President

Dr. W. F. Braasch of Rochester was elected 1936-37 president of the Northwest Regional Conference at Chicago, February 16.

Minnesota men who attended the meeting were Dr. W. W. Will, Bertha, president of the state association; Drs. H. Z. Giffin and Braasch of Rochester; Dr. B. J. Branton, Willmar; Dr. L. L. Sogge, Windom, and Dr. E. A. Meyerding, St. Paul.

It is interesting to note that the conference was originally organized in Minnesota in 1927 during the term of office of Dr. Braasch as president of the state society. It was held in St. Paul every year thereafter until 1936 but will be held in Chicago again next year owing chiefly to the fact that, with Indiana, Michigan and Illinois now interested members of the conference, the central point is Chicago.

Minnesota State Board of Medical Examiners

Re J. J. Heizman, Chiropractor

In the fall of 1935, for a period of about six weeks, one J. J. Heizman, who represented himself as a chiropractor, maintained an office at Stephen, Minnesota. He ran the following advertisement in the *Stephen Messenger*:

ANNOUNCEMENT Dr. J. J. Heizman Chiropractor

Announces the opening of offices in the F. C. Woods Building in Stephen, Minn., on September 5, 1935. Dr. Heizman is a graduate of the University of Zurich, Switzerland; a graduate of the Peerless College of Chiropractic, Chicago, Ill. Dr. Heizman has been Superintendent of the U. S. A. Base Hospital, Civilian Dept., Norfolk, Va.; Secretary of the Georgia Chiropractic Association and President of the Atlantic Chiropractic Association, with many years of experience.

Office Hours: 1:00 to 5:00 P. M.
Telephone No. 110
Stephen, Minn.

This advertisement appeared for the last time in the Stephen paper on October 3, 1935. Shortly thereafter Heizman left Stephen. This man does not have a Minnesota Basic Science certificate and therefore has no legal right to practice chiropractic or any other form of healing in the State of Minnesota. If he should appear in your community the Minnesota State Board of Medical Examiners respectfully asks that it be immediately notified at 524 Lowry Medical Arts Building, St. Paul, Minnesota.

OF GENERAL INTEREST

OF GENERAL INTEREST

Dr. W. R. Humphrey of Stillwater, who had the misfortune of sustaining an impacted fracture of the hip January 16 is reported well on the road to recovery.

* * *

Dr. J. S. Holbrook, Dr. V. I. Miller and Dr. G. A. Dahl, of Mankato, are motoring through the South and Florida. They will return about the 15th of March.

* * *

Dr. J. T. Schlesselman was injured in an automobile accident recently. His injuries consist of several broken ribs, and a minor head injury. He is doing nicely, and will soon be at work again.

* * *

Dr. Gage Clement, roentgenologist, St. Luke's Hospital, Duluth, is recovering at home from recent severe pneumonia and empyema. He plans a trip to the Southwest for further recuperation.

* * *

Dr. and Mrs. Frank Hirschboeck of Duluth have gone to Florida (reasons not given and none is requested). They expect to return via Detroit for the meeting of the American College of Physicians.

* * *

Dr. and Mrs. W. A. Coventry of Duluth left about February 23 for Honolulu. A special volcanic eruption is being planned to entertain them adequately lest there be too much let-down after W. A.'s strenuous year as president of the State Society.

* * *

The Blue Earth County Medical Society renewed the contract with the County Board to take care of the county work for the year 1936. This was on an experimental basis up to the 1st of January, 1936. It seems to be working out satisfactorily for both parties.

* * *

Dr. and Mrs. Gordon Watson of Soudan, Minnesota, are on a trip to Europe. They are visiting the usual medical centers and plan to spend time especially in Vienna. They have taken their car with them and their envious friends foresee for them delights unnumbered. Dr. Maurice Strauss, finishing his internship at St. Mary's Hospital, has charge of the Soudan Hospital in Dr. Watson's absence.

* * *

Dean Elias P. Lyon, who has been dean of the University of Minnesota medical school for twenty-three years, will retire June 30, 1936. In point of service he is the oldest medical dean in the country, having come to Minnesota in 1913 from St. Louis University, where he served as assistant dean of the medical college from 1907 until 1913. Dean Lyon was born in 1867. He graduated from Hillsdale high school and Hillsdale College in Michigan. He received his Ph.D. degree at the University of Chicago, later taking additional work at Heidelberg and St. Louis University.

A special program of lectures and demonstrations in medicine will be held under the direction of The Mayo Foundation from April 6 to 10, inclusive. Mornings will be devoted to surgical and medical clinics. In the afternoons and evenings, in addition to clinico-pathologic conferences, symposiums will be conducted on various phases of gastro-enterology, urology, acute and chronic empyema, vascular diseases of the extremities, hypertension, orthopedics, and oral plastic surgery.

* * *

The fifteenth anniversary of the organization of the Nicollet Clinic was celebrated in Minneapolis at the Radisson Hotel on Saturday evening, January 25, 1936. A large number of friends in the profession enjoyed the excellent program and banquet with members of the group.

Dr. S. Marx White introduced the toastmaster, Dr. Jennings C. Litzenberg. Stimulating addresses were made by Mr. Fred B. Snyder, president of the Board of Regents of the University of Minnesota, and Dr. Walter Biering of Des Moines, Iowa, former president of the American Medical Association. Dr. Biering discussed recent trends in medical progress and the proposed certification of specialists.

The esteem in which individuals of this group are held was demonstrated by the representative attendance of members of the medical profession at this anniversary celebration.

* * *

Veneral Disease Information is a monthly publication prepared by the U. S. Public Health Service for distribution among the medical profession throughout the United States. It is the purpose of the Public Health Service in issuing this publication to provide in condensed form a monthly summary of the scientific developments in the diagnosis, treatment, and control of syphilis and gonorrhea. More than three hundred American and foreign journals are reviewed for this work. During the past year thousands of physicians found this publication useful in enabling them to keep abreast with developments in venereal disease work. Anyone interested in securing the service which this monthly magazine provides, may procure it by sending fifty cents to the Superintendent of Documents, Government Printing Office, Washington, D. C.

Ideal Patients

A medical student was advised by an old doctor to specialize in skin diseases, because:

"The patients of a skin specialist do not call him in the middle of the night nor do they ask him to visit them at their homes. They don't telephone distress messages to the country club, and send telegrams to the football stadium. Finally, they never get well, but also they never die from a skin ailment. They are perfect patients."

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

Medical Broadcast for March

The Minnesota State Medical Association Morning Health Service.

The Minnesota State Medical Association broadcasts weekly at 10:00 A. M. every Monday over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters).

Speaker—William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month will be as follows:

March 2—Asthma in Children.

March 9—The Parathyroid Glands.

March 16—Tonsils.

March 23—Cause of Anemia.

March 30—Dental Caries.

American College of Surgeons

The sectional meeting of the American College of Surgeons for the states of Nebraska, Iowa, Wyoming, North Dakota, South Dakota, Minnesota, Kansas and Colorado will convene at Omaha, March 11-13, 1936. The meeting will consist of operative and non-operative surgical clinics, conferences, exhibits and scientific sessions.

Members of the profession at large in the states concerned are cordially invited to attend the meeting. Dr. Herman F. Johnson, 831 Medical Arts Bldg., Omaha, Nebraska, is chairman of the local committee on arrangements.

State Meeting

Among the visiting speakers who have already consented to speak at the 83rd Annual Meeting of the Minnesota State Medical Association to be held at Rochester May 4, 5 and 6 are:

The distinguished Swiss physiologist, Dr. Leon Asher of Berne, Switzerland; Dr. Willis F. Manges, radiologist of Philadelphia; Dr. Elliott P. Joslin of Boston, who will read a paper on diabetes; Dr. F. A. Collier, Ann Arbor, and Dr. Donald Guthrie of Sayre, Pennsylvania, surgeons; Dr. Joseph A. Capps of Chicago.

Plans are under way, also, to secure Dr. Ferdinand Sauerbruch, chest surgeon of Berlin, to speak at the meeting and Dr. Max Cutler of Chicago. Dr. Sauerbruch and Dr. Asher are expected to come to Rochester to attend the sessions of the American Thoracic Surgical Society also, since the two associations are holding their meetings at the same time. It is hoped that Dr. Cutler will be present to deliver the annual Citizens' Aid Memorial lecture.

Dr. Manges will deliver the annual Russell D. Carman Lecture under the auspices of the Minnesota Radiological Society. Dr. Capps will come under the joint sponsorship of the Northern Minnesota Medical

Association and the Minnesota State Medical Association.

The program plan for the 1936 meeting calls for clinics each morning until 10:30 at St. Mary's Hospital. The rest of the meeting sessions and the exhibits will be held at St. Mary's Nurses' Home. A half hour each morning and afternoon will be devoted to the scientific and technical exhibits. The hours just before and after noon will be occupied by visiting speakers. Afternoons will be devoted to papers by Minnesota physicians.

One of the unusual features of the three-day program is the crime study session scheduled for Tuesday evening. Government experts in ballistics, finger printing and other aspects of the war on crime that are of especial interest to physicians will be there to address the doctors.

A meeting on Medical Economics will be held Monday evening. Speakers will include Dr. J. Tate Mason, Seattle, president of the American Medical Association, and Dr. Olin West, Chicago, general manager of the American Medical Association.

The Women's Auxiliary to the state association will also hold its annual meeting in Rochester at the same time. Fraternity meetings will be scheduled and golf is expected to occupy any spare time the doctors may find in between convention sessions.

Results of Questionnaire

Subjects scheduled for discussion at sessions of the 83rd Annual Meeting of the Minnesota State Medical Association to be held in Rochester May 4, 5 and 6 were selected on the basis of answers to questionnaires sent to members by the Committee on Scientific Assembly. Suggestions were received from 225 members.

It is interesting to note that the largest number of requests received were for discussions of sinusitis. Other subjects for which four or more requests were received include: endocrines, appendicitis, pneumonia, eczema, cataract treatment, prostate, fractures, immunizations, anesthesia and physiotherapy.

Amendment to Constitution

This is the third and final publication of the following amendment before it becomes an official part of the Constitution:

Article IV, Sec. 4.—Affiliate Members.

Affiliate members shall be those members of component medical societies:

1. Who through disability are unable to engage in the practice of medicine.
2. Who have retired from the practice of medicine.

Provided, however, that such member, in either class, shall have first, upon his own request, been declared an affiliate member of such component society at its regular meeting, such action having been approved by the Council, and provided further, that such Affiliate Membership shall automatically cease and revert to its previous status upon the termination of the disability or upon the resumption of practice.

Nothing in this section shall in any manner invalidate an Affiliate Membership in good standing at the time of the adoption of this amendment.

WOMAN'S AUXILIARY

Judd Lectureship

The Third Annual Lecture in the E. Starr Judd Lectureship in Surgery, established at the University of Minnesota by the late Dr. E. Starr Judd, will be given by Dr. Frank C. Mann, Professor of Experimental Surgery in the Mayo Foundation. The lecture will be held in the Music Auditorium on the University campus in Minneapolis on Tuesday, March 17, at 8:15 P. M. The subject of Dr. Mann's lecture will be "Hepatic Physiology and Pathology from the Surgical Viewpoint: A review of experimental investigations."

Minnesota Academy of Medicine

The Annual Meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 8, 1936. The president, Dr. Thomas S. Roberts, called the meeting to order at 8:10 p. m.

There were twenty-six members present.

The president announced that the reading of the minutes of the previous meeting and all other business would be dispensed with, and he would turn the meeting over to Dr. Hall, the retiring president.

DR. A. R. HALL, Saint Paul, addressed the Academy, choosing as the title of his Presidential Address "Hypoglycemia," giving special attention to its clinical manifestations.

R. T. LAVAKE, M.D., *Secretary.*

Minneapolis Surgical Society

The fourteenth annual dinner meeting, commemorating the anniversary of the foundation of the Minneapolis Surgical Society, was held under the presidency of Frederick A. Olson at the Minneapolis Club on the evening of February 6, and attended by 220 members and guests. Among the latter were W. J. and C. H. Mayo, to receive honorary memberships; D. C. Balfour, president of the American College of Surgeons; H. B. Zimmermann, president of the St. Paul Surgical Society; Karl Meyer, president of the Chicago Surgical Society, medical superintendent of Cook County Hospital and Regent of the University of Illinois; Harry Klein, vice president of the Duluth Surgical Society; Stanley J. Seeger, Milwaukee, immediate past president of the Wisconsin State Medical Association and president of the alumni association of the Mayo Foundation; A. R. Metz, secretary of the Chicago Surgical Association and chief surgeon of the Milwaukee railway; W. A. Coventry, Duluth, president, and W. W. Will, Bertha, president-elect, of the Minnesota State Medical Association, with many others from Minnesota and surrounding states. The guest speaker was Frank L. Lahey, Boston, director of the Lahey Clinic, who gave a masterly address on his views and experiences in the diagnosis and surgery of carcinoma of

the colon and rectum. Vocal selections by a professional male quartet were interspersed between the various numbers and there was a short "Interval of Silence" in memory of two members, Arthur T. Mann and E. Starr Judd, who had passed away within the year. The evening was closed with the showing of motion pictures of outdoor life from *Field and Stream*.

Blue Earth County

All officers of the Blue Earth County Medical Society were reelected for 1936. They include: Dr. A. E. Sohmer, Mankato, president; Dr. Fred Franchere, Lake Crystal, vice president; Dr. Charles Koenigsberger, Mankato, secretary; Drs. E. W. Benham, Mankato, R. T. Edwards, Elysian, and H. J. Lloyd, Mankato, censors; Dr. A. G. Liedloff, Mankato, delegate, and Dr. M. I. Howard, Mankato, alternate.

WOMAN'S AUXILIARY

MRS. F. J. ELIAS, *President*, Duluth, Minn.
MRS. L. W. BARRY, *Editor, Press and Publicity*,
2193 Sargent Ave., St. Paul, Minn.

On January 27, 1936, a special meeting of the executive board of the Woman's Auxiliary to the Minnesota Medical Association was held in Saint Paul at the Commodore Hotel. This meeting was called by Mrs. F. J. Elias, president, to honor Mrs. Rogers N. Herbert of Nashville, Tenn., president of the Woman's Auxiliary to the American Medical Association. Mrs. Herbert reviewed the activities of the national group at the session of the state executive group held in the morning. At noon she was guest of honor at a luncheon given for members of the state board and also for members of the Hennepin and Ramsey County boards. Mrs. Elias presided and introduced the speakers, Dr. R. M. Burns and Dr. A. G. Schulze. In the afternoon Mrs. Herbert and Mrs. Elias were honored guests at a delightful tea given by the Auxiliary to the Ramsey County Medical Society, of which Mrs. J. J. Ryan is president. Mrs. Herbert was the house guest of Mrs. James Blake, Hopkins, Minn. Mrs. E. M. Hammes, president-elect of the State auxiliary, entertained at luncheon in honor of Mrs. Herbert, Mrs. Blake and Mrs. Elias on January 28.

In spite of the extreme cold, Mrs. J. F. Norman, Crookston; Mrs. A. C. Baker, Fergus Falls; Mrs. R. J. Josewski, Stillwater; Mrs. J. A. Thabes, Sr., Brainerd; Mrs. W. J. Ryan, Duluth; Mrs. James Blake, Hopkins, and several from points not quite so distant attended the meetings. A nominating committee was elected and will present their slate at the annual meeting to be held in Rochester, Minn., on May 4, 5 and 6, 1936. All members are urged to attend this meeting.

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The *Auxiliary to St. Louis County Medical Society* has been carrying on in its usual active way. A dinner dance and bridge party were recently sponsored and enjoyed.

BOOK REVIEWS

Hennepin County Auxiliary members, at a recent meeting, heard an interesting talk on "Medical Economics" given by Dr. Wm. B. Roberts of Minneapolis.

* * *

On February 11 *Ramsey County Auxiliary* sponsored a double header bridge party—one in the afternoon and one in the evening. Mrs. Herman Kesting, general chairman of the Ways and Means Committee, and Mrs. E. G. Sterner, vice chairman, assisted by a large committee, were responsible for a most enjoyable afternoon and evening to many members and their husbands. The event netted a considerable amount which will be added to the Philanthropic Fund.

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The *West Central Medical Auxiliary* reports the following as their officers for the year: Mrs. Herman Linde, Cyrus, president; Mrs. E. T. Fitzgerald, Morris, vice president; and Mrs. E. M. Elsey, Glenwood, secretary and treasurer.

* * *

Mower County Auxiliary reports monthly on their meetings. While their attendance is only fair, they spend their time in a profitable way—folding dressings for the hospital at Austin.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES. For the Fiscal Year 1935. 158 pages. Illus. Price, 75c cloth. Washington, D. C.: Superintendent of Documents, 1935.

THE PSYCHOLOGY OF DEALING WITH PEOPLE. Wendell White, Ph.D., Asst. Professor in Psychology, University of Minnesota. 256 pages. Price, cloth, \$2.50. New York: The MacMillan Co., 1936.

DISEASE AND DESTINY. Ralph H. Major, M.D., author of "The Doctor Explains," etc. 338 pages. Illus. Price, cloth, \$3.50. New York: D. Appleton-Century Co., 1936.

PHARMACOPOEIA OF THE UNITED STATES OF AMERICA. Issued by authority of the United States Pharmacopoeial Convention. 676 pages. Price, leather \$6.00, cloth \$5.00. Easton, Pa.: Mack Printing Company, 1936.

COMMON CONTAGIOUS DISEASES. Philip Moen Stimson, A.B., M.D., Assistant Professor of Clinical Pediatrics, Cornell University Medical College, Visiting Physician Willard Parker Hospital, etc. 537 pages. Illus. Price, flexible binding, \$4.00. Philadelphia: Lea & Febiger, 1936.

YOU MUST EAT MEAT. Max Ernst Jutte, M.D., Formerly Lecturer on Stomach and Intestinal Diseases, New York Polyclinic Medical School, etc. 164 pages. Illus. Price, cloth, \$2.00. New York: G. P. Putnam's Sons, 1936.

BLOOD GROUPS AND BLOOD TRANSFUSION.

Alexander S. Wiener, A.B., M.D. Chas. C. Thomas Co., Baltimore, Maryland, 1935.

Dr. Wiener, in *Blood Groups and Blood Transfusion*, adequately accomplishes his avowed intention of presenting "the important known facts concerning individual differences of the blood . . . in a manner which will make the subject readable . . . but without sacrificing completeness of exposition." This monograph, utterly lacking in pretension, simply and directly presents an amazing amount of material in readily digestible form. The major information is conspicuously practical, as suggested by such chapter sub-titles as "Sources of error in blood grouping," "Indications for and reactions to blood transfusion," "Technic of blood transfusion" and "Medicolegal applications of blood grouping." In the section on forensic medicine, well-selected case histories effectively illustrate the points of practical interest. In all, these sections should particularly appeal to those persons seeking general knowledge in this field.

For those interested in the laboratory, there is adequately detailed information concerning technic to make reference to original sources unnecessary. If for no other reason, the resultant economy in time should make this treatise a part of every completely equipped laboratory. In contrast with monographs of similar scope, the bibliography is limited, but obviously select. There is no sacrifice of pertinent material; to the contrary, moot questions are only briefly indicated. This obvious and admitted bibliophobia, to coin a term, is quite commendable, and adds to, rather than detracts from, the attractiveness of the style of the publication.

However, the author does not ignore his more erudite readers, for the sections on genetics with an application of the biometric method shows that he is not lacking in that quality. Even this more or less complex and abstruse material is effectively treated in that uniquely direct manner that typifies the whole of this treatise.

HARRY AGRESS, M.D.

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